NOVEMBER 8, 1958
VOL. 155 — NO. 19

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

BETTER DUST CONTROL

Effective dust control in equipment rooms is an important requirement for rendering trouble-free telephone service. Cincinnati & Suburban Bell Telephone Co. janitors now use this swivel-headed cleaning tool with treated paper covering.

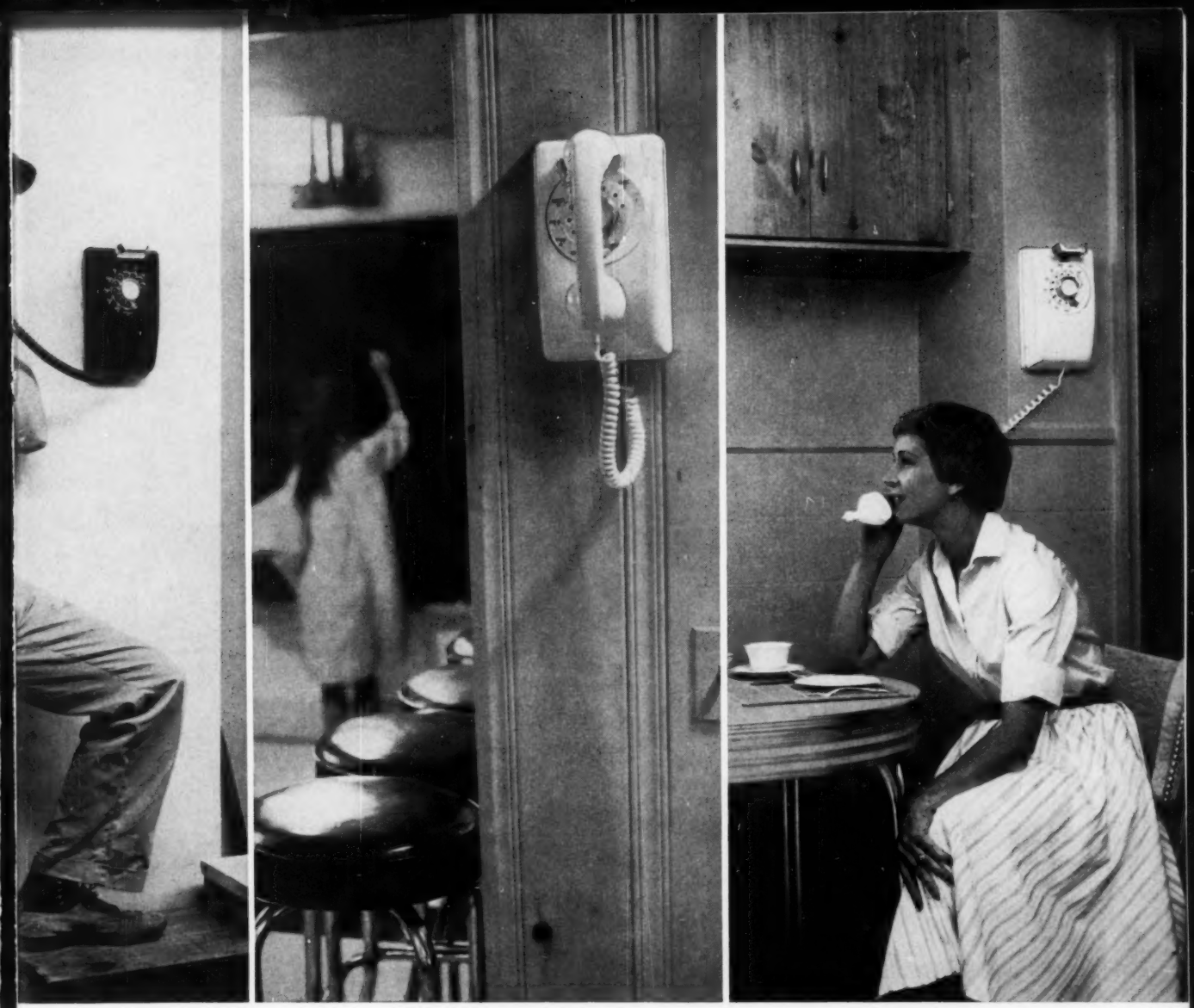
Published every week on Saturday by TELEPHONY PUBLISHING CORP. 608 S. Dearborn St., Chicago 5, Ill. Subscription $4.00 per year. Entered as second class matter at the Post Office at Chicago, Ill., under the act of Mar. 3, 1879.

Guaranteed Circulation This Issue
13,032 of Which 12,454 Is Paid

ELECTRONICS SECTION — Page 49

MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING

● FITS ANYWHERE...You can install the new Stromberg-Carlson 1553-W Wall Telephone anywhere -- in any number of convenient places for commercial subscribers...in kitchen, hallway, workroom, den for home users. It's an ideal extension for modern homes...perfect as a "first phone," too. Wherever you mount the 1553-W,



its clean modern design adds sparkling beauty. A high-efficiency "500-type" telephone, this instrument is available in ten decorator colors, including black or white. For details and ordering information see your Stromberg-Carlson representative.

STROMBERG-CARLSON A DIVISION OF GENERAL DYNAMICS CORPORATION

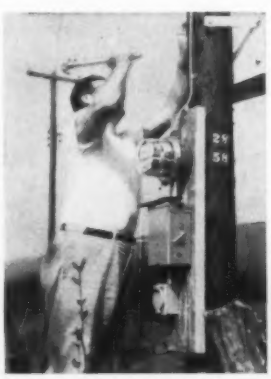
ELECTRONIC AND COMMUNICATION PRODUCTS FOR HOME, INDUSTRY AND DEFENSE

Good News from Kellogg

K-31 brings toll quality to rural carrier at low cost!

Transistorized! Up to 8 Separate Voice Channels!
Kellogg's new K-31 rural subscriber carrier system provides telephone companies with toll quality subscriber carrier at low cost. The system is completely transistorized, features printed circuits, miniaturized sub-assemblies and plug-in construction.

Standby power, consisting of two small batteries and a transistorized charger in a pole-mounted housing, is available. This is possible because power consumption is less than three watts even during talking.



All subscriber terminal equipment, including standby power supply, are pole-mounted, easy to install.

Weatherproof housings and sun shields are additional K-31 features.

K-31 has built-in compandors to assure quiet talking circuits and is automatically regulated to eliminate the effect of changing weather conditions over a wide range of carrier line losses.

Line-up and test procedure is very simple —a single level control for each direction of transmission. Terminating telephone type jacks are provided for ease and speed in testing. Installation time is held to a minimum by the use of a unique pole-mounted housing with built-in protected terminal blocks for external connections.

These design features plus top quality components and workmanship make K-31 reliable and stable in its operation.

Ask your Kellogg sales representative for full details.

Kellogg Switchboard and Supply Company
6650 South Cicero Avenue, Chicago 38, Illinois
Communications Division of
International Telephone and Telegraph Corporation

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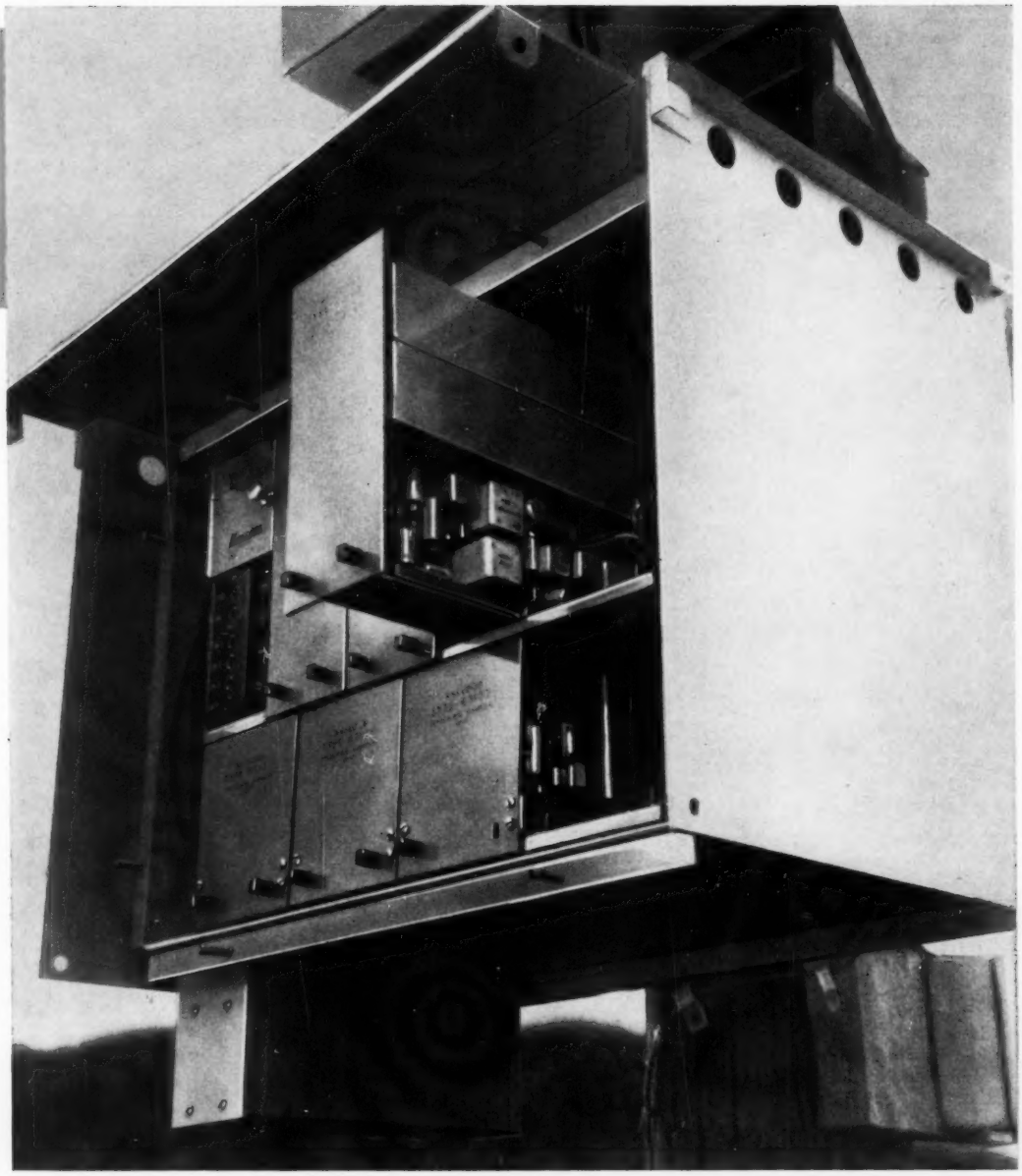

Plug-in construction makes K-31 maintenance simple.

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Telephony is go

LENKURT "building-block" system plans for your growth

TELEPHONE companies are installing microwave to obtain additional toll circuits for several good reasons. Among them: (1) It is quick, easy and economical—(2) requires no right-of-way—(3) solves tough terrain problems —(4) is simple to maintain—and (5) highly reliable—more weatherproof than other facilities.

And experienced telephone people are choosing Lenkurt *Microtel!* That's because it's the most advanced microwave equipment on the market and the most flexible in design to meet future growth requirements. Consider the rate of toll growth and you'll see how important this is!

Simple plug-in units

With flexible Lenkurt 45BX Carrier, a system can be installed initially with only a few carrier channels. Then, as traffic increases, it can be expanded economically at will by the addition of more channelizing equipment or by paralleling transmitter-receiver assemblies.

All plug-in units of Type 74A Microtel are similar-to those in the famous "universal" Lenkurt 45-class equipment. This greatly simplifies maintenance.

Start small, if you wish, with as few as 4 to 12 channels. Later on you can add 12- or 24-channel groups on a stackable basis. A single *Microtel* terminal can accommodate up to 240 channels; and with r-f circulators, *as many as four systems can use the original antenna and antenna transmission line!* For complete information, send the coupon or call your nearest Automatic Electric representative.

Automatic Electric Sales Corporation
Northlake, Illinois ***(Att.: T. B. Collins)***

Please send booklet describing new Lenkurt Microtel System.

NAME ..... TITLE .....

COMPANY .....

ADDRESS .....

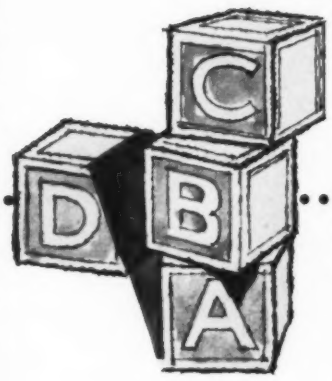
CITY ..... ZONE ..... STATE .....

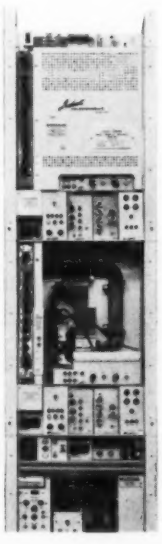
In Canada: Automatic Electric Sales (Canada) Ltd., 185 Bartley Drive, Toronto 16, Ontario.

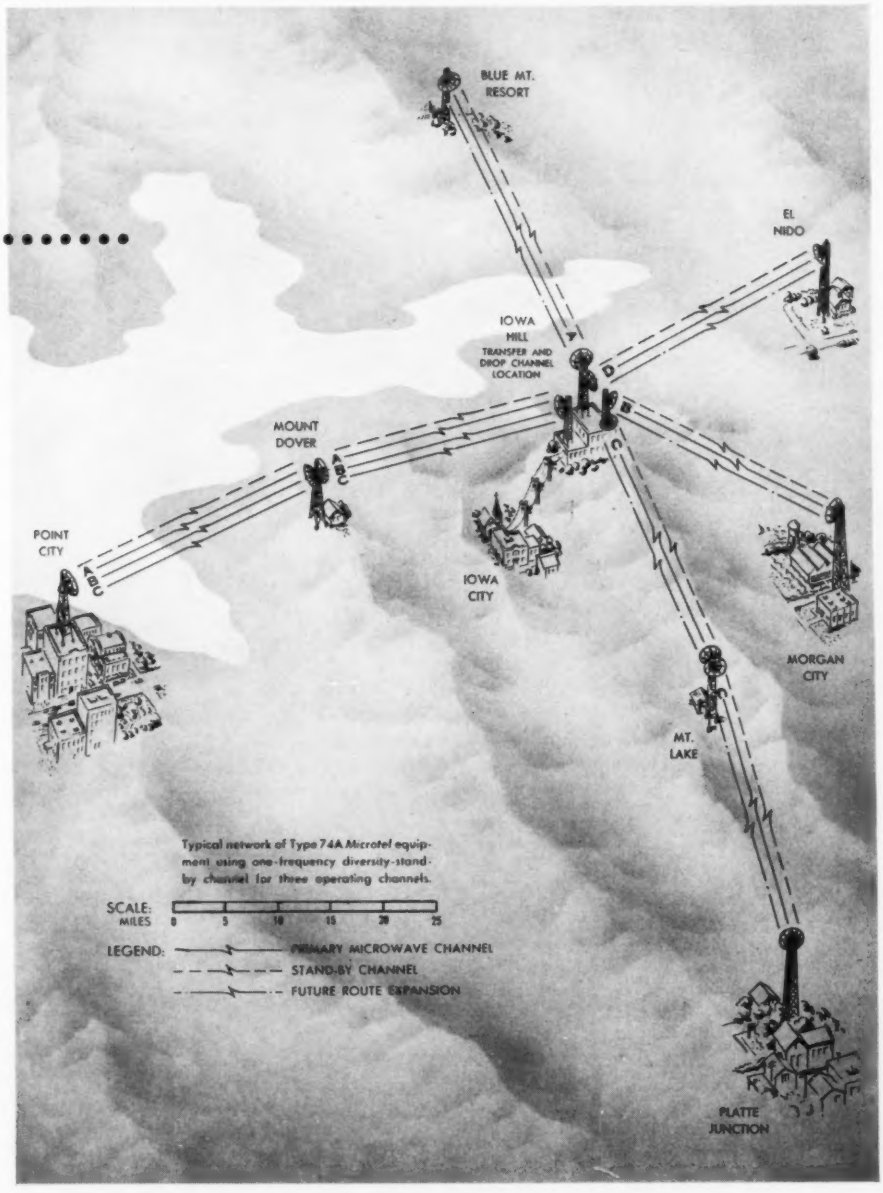
New 6,000 mc. **microtel** Type 74A

Designed to save space (2 systems can be mounted on a single rack) and use less power (only 360 watts per system), new Lenkurt *Microtel* Type 74A provides high-quality, broad-band microwave transmission facilities in the 6,000 mc. region. *Microtel* is equally satisfactory whether the need is for only a few circuits or for a high-density network with 720 voice channels (three operating r-f channels with one stand-by on a common antenna). As many as 960 voice channels can be supplied on 4 operating r-f channels. It is available from Automatic Electric as a complete package—*engineered, furnished and installed*—on one order.

ing microwave!







AUTOMATIC ELECTRIC

Subsidiary of **GENERAL TELEPHONE**

FLASHES AND PLUGS

SOUP TO NUTS PATROL. The harassed Cairo, Egypt husband knew exactly what to do when his two wives began quarreling over his favors. He dialed "122."

In minutes a young police corporal was at his house in a police prowl car to calm the situation. He suggested that a coin be flipped. That was done and peace reigned, at least for that night, anyway.

The call was only one of more than 150 appeals the emergency bureau of the Cairo Police received in that 24-hour span.

Foster Hailey, in a New York *Times* article, describes the bureau which is called in Arabic, aptly enough, "El Nagda," which means "The Help." It deals with anything and everything, from family quarrels and missing cats to homicide and riots.

No problem is too small in the city of 2.5 million for the bureau to handle, says Major Abdul Rachman el-Faramawi, the bureau's director. None is too big.

Major Faramawi organized the bureau in 1955. Its calls have risen from an average of 15 a day for the first few months to 150 now.

During a typical 24 hours, the bureau answered appeals for assistance involving the following: 52 quarrels, 14 automobile accidents, four robberies, two fires, 27 complaints, mostly about noise, 13 public utility failures and 39 others.

Among the complaints was that of a man whose maid had been out too long. He asked the bureau to look for her and send her home. It did not.

The estranged wife of a Cairo millionaire called to say her husband had "kidnapped" their daughter from her suite at the Heliopolis Palace Hotel. Father and daughter were found and escorted to a police station for explanations. (The bureau itself has no detention room.)

The fame of the bureau has spread beyond Cairo. A distraught man called from Mansura, Egypt, to say he had heard his nephew had died and asked the bureau to check. It did and informed him the report was true.

The bureau has 10 trunk telephone lines and a separate switchboard for direct connection with other city departments such as fire, public utilities and hospitals.

A new, streamlined control room is being wired now. Its main feature will be a large electric wall map that will show where all the bureau's prowl cars and motor launches are at any time and what they are doing—cruising, on a call or momentarily out of service.

•

TENDER FOOT ON SEA LEGS. Brand new Ensign: "Listen, sailor, if the captain ever caught you calling that deck a floor, he'd throw you right out of one of those little round windows."

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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

November 8, 1958

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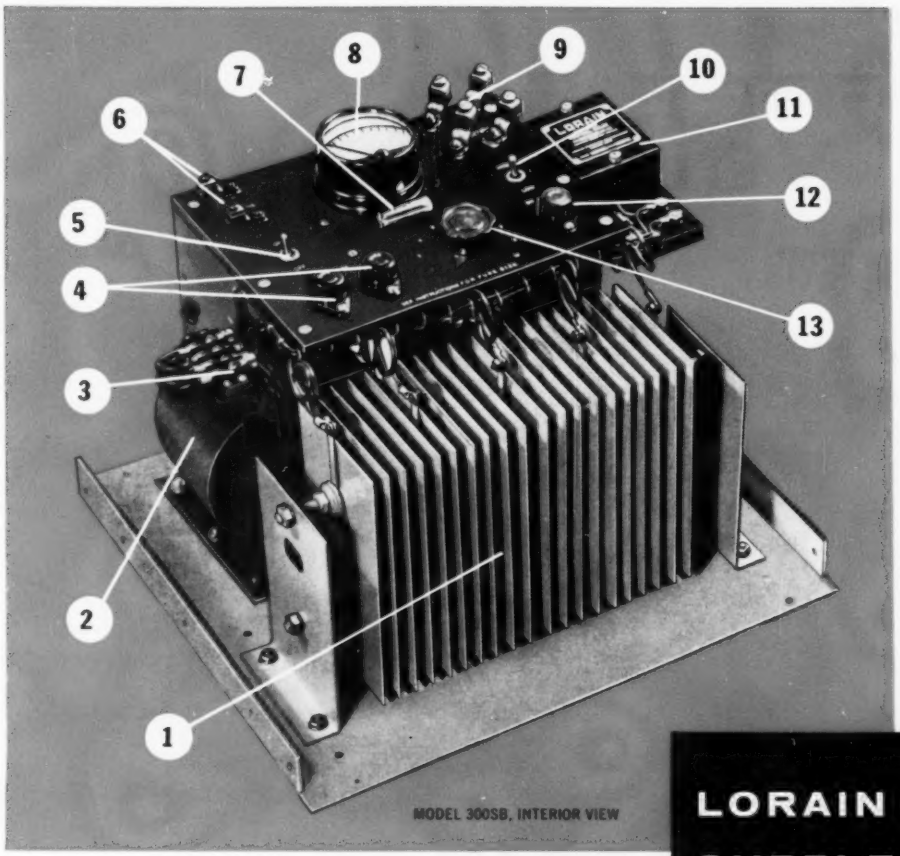


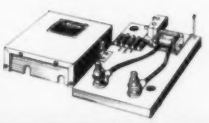
1. Selenium rectifier
2. Isolating transformer
3. Taps to adjust for A-C line voltage
4. A-C line fuses
5. On-off switch
6. A-C input terminals
7. Neon lamp to indicate tripping of overload relay
8. Output ammeter
9. D-C connections
10. Output range selector switch
11. Control relay, type FS1R
12. D-C load fuse
13. Tap switch

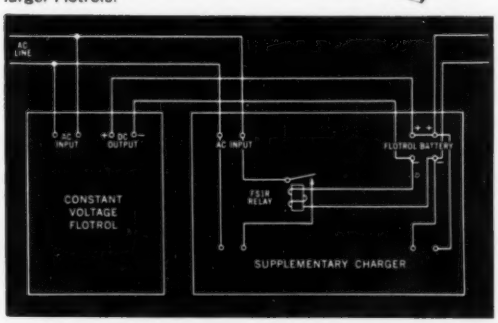
LORAIN FLOTROL SUPPLEMENTARY CHARGERS

For peak loads and growing plants . . . save money with "a Flotrol and a half"

Here is the low-cost answer to expanding loads that are taxing the capacity of your charger. A Lorain Supplementary Charger matched to your Flotrol as much as doubles its capacity at a fraction of the cost of a larger Flotrol. It is also used in new installations to get an "in-between-size" Flotrol and avoid paying for un-needed capacity. The Supplementary Unit delivers a constant current which is adjustable by a tap switch. Controlled by the master Flotrol, it provides a closely regulated output voltage. A control relay shuts the unit off when it is not needed. Proved in service since 1950. Thousands in use. Seven models, with output from 3 to 24 amps., 45-56 and 25 volts. Rack or wall mount. Write for Bulletin 171A.

FS1R Control Relay is mounted inside the unit and is wired as below. Externally mounted control relays (see right) are offered to simplify heavy wiring for the larger Flotrols.





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our equipment is sold through leading telephone distributors

FLOTROL SUB-CYCLE

LORAIN *Products Corporation*

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BEFORE YOU BUY *"Adequate Intercept"*

FOR THE INTERIM PERIOD

INVESTIGATE...

UNIVERSAL COMPUTER INTERCEPT

100% Intercept is

The Ultimate Goal of the Direct Distant Dialing Program

Universal 100% Toll Computer Intercept is the *only* intercept that can be installed in a toll center to serve outlying offices. May also be installed in end offices to serve subscribers.

Other ***UNIVERSAL*** Equipment:
Code-to-Selective **RINGING CONVERTER**
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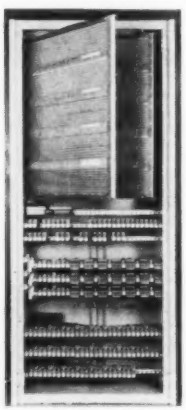

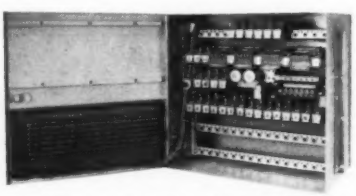

Cabinet 19" x 17" x 8" for rack or wall mounting, 60 lines TPL illustrated.

Cabinet 84" x 36" x 12", capacity 40,000 stations, TPL or TPS or any combination of both.

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HOW THE WEBSTER ELECTRIC Teletalk can...

extend communication convenience for your customers —and build up EXTRA revenue for you

New 1200 series Teletalk intercommunication equipment has been especially designed for telephone company use to help you provide inter-office and inter-building communication for your commercial and industrial customers — *utilizing standard telephone circuits*. This will in no way affect telephone conversations in the same or adjoining cables.

Teletalk is available from Graybar — nationally. Through a wide variety of models and circuit possibilities, you can fit Teletalk exactly to the needs of each individual customer. Wherever there is a need for amplified communication, a discussion of Teletalk convenience can lead to an immediate increase in your lease revenue. Call your nearby Graybar office for full details or write for Bulletin MI2AI-1. 810

Above: This 12-station master unit of the new Teletalk 1200 Series can be connected to provide secretive or non-secretive communication with other stations. Models are available from six to 48 station capacity. Below: Two-way conversation is provided over zero-level telephone lines with this Teletalk RM-B (AC) remote speaker station. Contains its own power supply, amplifier, attenuating pad and line-matching transformer.

Call Graybar first for...

GRAYBAR ELECTRIC COMPANY, INC.
420 Lexington Avenue
New York 17, N.Y.

Graybar Everything Electrical
Graybar ELECTRIC COMPANY
QUALITY SINCE 1869
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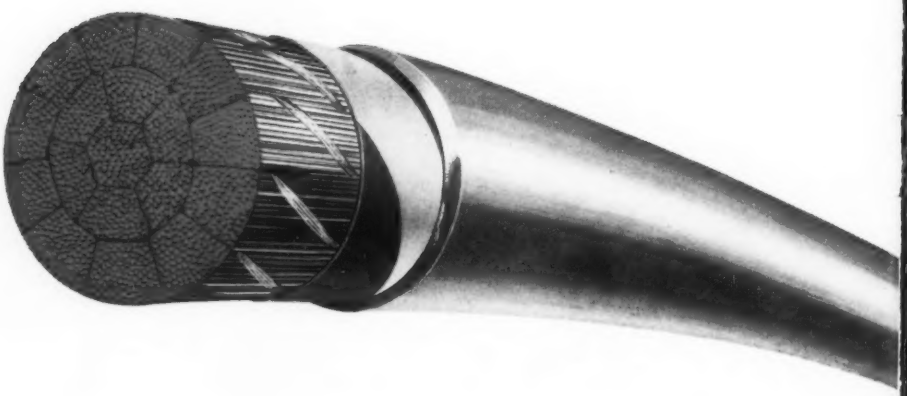
IN OVER 130 PRINCIPAL CITIES



PHELPS DODGE TELEPHONE WIRE AND THE "MINE-TO-MARKET" QUALITY

Paper-Insulated Lead-Sheathed Telephone Cable

CABLE LINE!

This Phelps Dodge telephone cable combines the superior transmission characteristics of paper insulation with the durability and moisture resistance of lead. It is backed by Phelps Dodge's extensive research and manufacturing experience in the paper-lead cable field.

The controlled craftsmanship and quality of this paper-lead cable are typical of the entire line of Phelps Dodge telephone wires and cables, including:

- Exchange Area Telephone Cable
- Self-Supporting Telephone Cable
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- Interior Telephone Cable
- Rubber-Insulated Lead-Sheathed Telephone Cable
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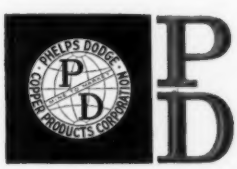

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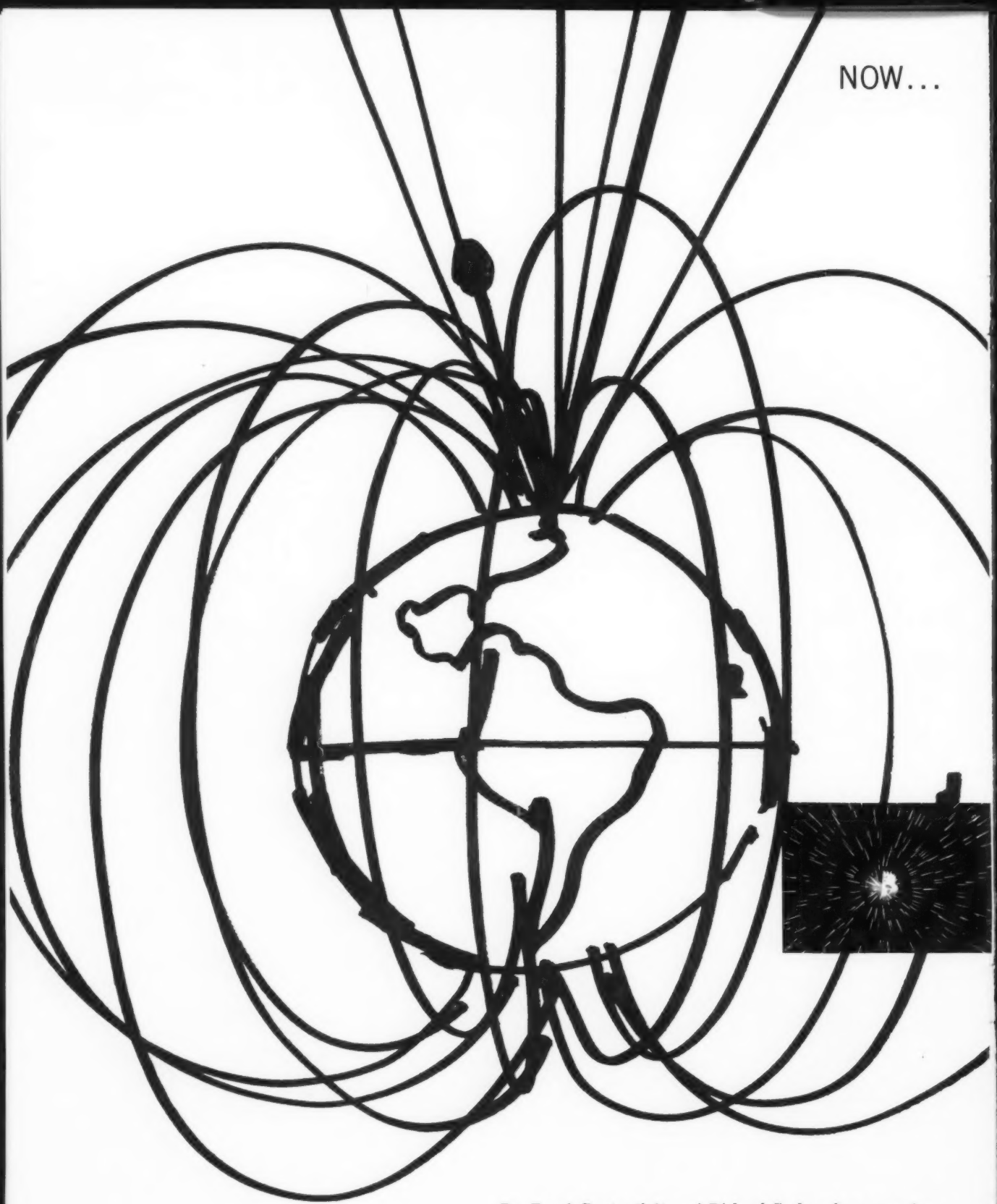
NOW...



Dr. Frank Baxter (left) and Richard Carlson in a scene from "The Strange Case of the Cosmic Rays." The model of the earth and its magnetic field shows how cosmic rays are deflected as they hurtle in from outer space.

MORE TIMELY THAN EVER!

"The Strange Case of the COSMIC RAYS"

COMING BACK TO YOUR TELEVISION SCREEN, NOVEMBER 23rd, ON NBC-TV

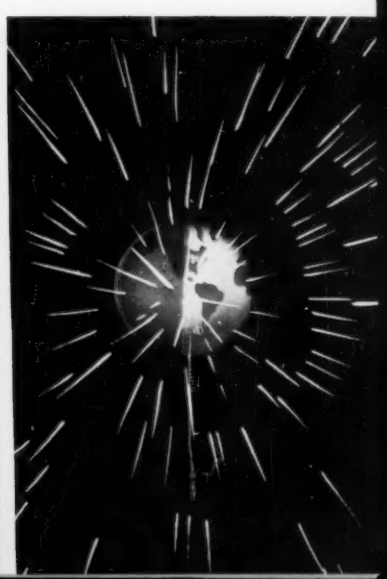
The earth is under continual bombardment by mysterious rays of all kinds. Because these rays emanate from outer space—the "cosmos"—they are called cosmic rays.

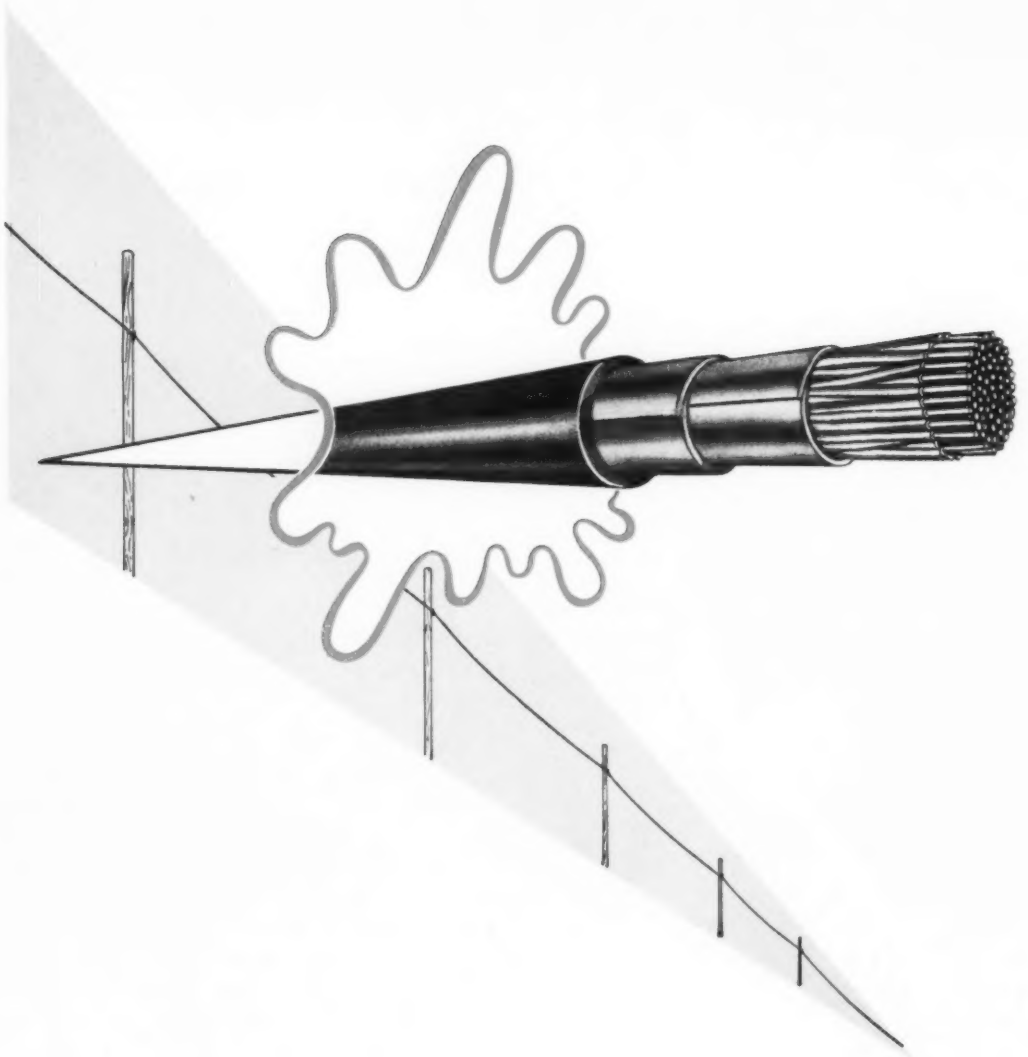
What are cosmic rays? How do they threaten our exploration of space? You'll learn the answers to these timely questions when the Bell System's science show, "The Strange Case of the Cosmic Rays," returns to your television screen, November 23rd, on NBC-TV. Consult your local TV listings for time and channel.

Frank Capra, producer and director, skillfully combines actors, cartoon animation, motion pictures and puppets to tell this exciting story. In addition, you'll see some of the most famous pictures in the history of the physical sciences.

We sponsor shows like this in order to promote interest in science, and to awaken the public to the advances that science has made in many fields, including telephony.

BELL TELEPHONE SYSTEM





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ANACONDA STALPETH

PAPER-INSULATED TELEPHONE CABLE THAT'S 30 TO 50% LIGHTER!

Save on initial costs . . . on shipping, installation, maintenance.
Offers all the advantages of Paper-lead Cable Plus

NEW ECONOMY! Right off, Anaconda Stalpeth saves you money in initial cost. Its lighter weight saves you more on freight charges. You cut installation costs. Its light weight is of tremendous help for fast aerial installations. Stalpeth also simplifies the problem of pulling through ducts. Stalpeth goes right on saving you money, for its dependability, electrical and mechanical properties eliminate many maintenance problems.

NEW LIGHT WEIGHT! Stalpeth is 30% to 50% lighter than ordinary paper-lead cable because the light-weight sheath is STeel, ALuminum and PolyETHylene rather than heavy lead. The result: new ease and economy in both installation and maintenance!

STALPETH—Paper-insulated, steel tape, aluminum shield, polyethylene jacket.

NEW DEPENDABILITY! Each conductor for Stalpeth is individually inspected as it comes out of the insulating machine. In addition, every pair is tested. Thorough in-process control eliminates need for costly, time-consuming field inspection.

NEW OUTSTANDING FEATURES! Stalpeth offers many advantages: (1) The polyethylene jacket offers electrical protection from falling power lines. It prevents power faults which could damage lead-sheathed cable. (2) Stalpeth's high-molecular-weight polyethylene jacket prevents corrosion problems frequently met in duct installations. (3) The electrical characteristics of Stalpeth have been engineered to the high standards of all Anaconda cable: minimum conductor resistance . . . high insulation resistance . . . maximum dielectric strength . . . low resistance shield—*traditional paper quality with new economical light-weight sheath.*

NEW SERVICE! Anaconda is the independent telephone cable manufacturer to the independent company. Behind this manufacturer stand 50 years of experience in the production of paper-insulated cables. And today the latest in manufacturing equipment and testing devices, and telephone-experienced personnel join forces to bring you top-quality Stalpeth. Distribution points across the country assure you fast delivery and service. Write for Bulletin DM-5771, containing complete technical data on Stalpeth, to: Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.

58326

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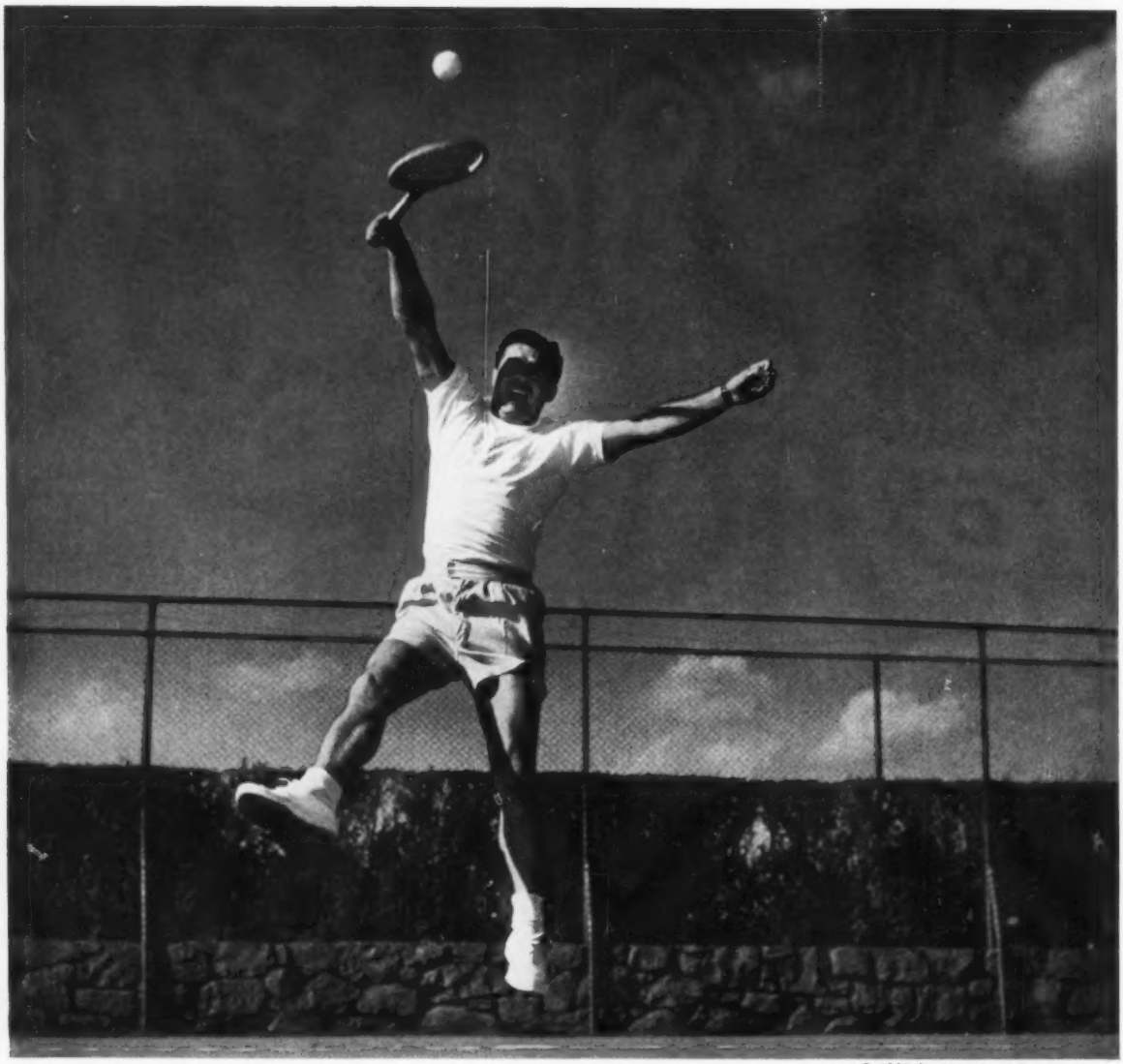
FOR **STALPETH**

PAPER-INSULATED TELEPHONE CABLE

the independent manufacturer to the independent telephone industry



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SMASHING *all records for long battery life...* **gould**

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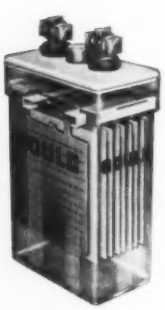
GOULD PLANTÉ
The Aristocrat of
Stationary Batteries



You want the most
for every dollar invested in batteries. Gould can help you.

Batteries get harder use some days, lighter use other days. Operating conditions are seldom constant. Frequent over-discharging and over-charging, which is not recognized and corrected, can seriously harm a battery.

You can avoid this possibility. Assure maximum operating efficiency, lower maintenance costs, and longer battery life, by letting Gould help you establish a simple effective preventive maintenance program for your batteries.

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR

Assesses business and political tides on eve of congressional election. Federal Communications Commission action in two television license cases remains under scrutiny. BDSA sees need to revise telephone industry plans upward for 1959. FCC authorizes AT&T to reduce teletypewriter rate request.

THESE LINES are necessarily written on the eve of the congressional election of Nov. 4 and, therefore, prior to any knowledge of the outcome of the balloting. Yet, your correspondent can say with a certain measure of assurance that Democratic majorities in both branches of the new Congress should be increased substantially. If it does not turn out that way, a good many professional poll takers, nose counters, and so-called political observers should be seeking other occupations.

Assuming, however, that the verdict of the ballot box will follow the indicated trend, businessmen of all lines of industry naturally will want to know what is in store for them and why the temper of the majority of the people voting has turned decidedly from the mood of only two years ago when President Eisenhower was re-elected with a landslide majority.

By this time next week the analysts and the editors will be busy handing out a good bit of hindsighted interpretation generally heavily flavored with their own preferences and political predilections. But, at least these comments of your correspondent have the doubtful virtue of being unswayed by any positive foreknowledge of the result.

Looking at the campaign just completed in a broad way, it is difficult to see any single dominant or persuasive issue. Indeed, there is much evidence of individual voters casting their ballots for diametrically contrary reasons. Some voters expressed a desire to vote Democratic because they hoped the next Congress would be more liberal in spending and conferring government handouts and other benefits on the "little man." Still others, voting the same way, expressed disappointment with the Republicans because they did not cut taxes and because prices keep going up. Obviously these are contradictory reasons. But, whether they are sound reasons or not, that is the way people vote.

The Republicans could make out a good case (on paper) for their relatively conservative policy of successfully "sweating out" the recent recession without involving the federal government in a lot of expensive public works of the "leaf-raking" variety. That would only have increased the deficit and spurred inflation. So, now that there are definite signs of economic recovery, the GOP campaign orators had some reason to point with pride. But, this was to no avail with a good many people who were actually hungry and unemployed in the months gone by.

Actually, the majority of the voters in the great independent class seem to be restless. They seem to be in the mood for a change and the present Republican administration was the handiest target. The relation of the two parties was about the same, in a broad way, in 1946—except that the positions were reversed. In that election year, the Democrats had been firmly in control for 14 years. They had successfully and victoriously completed the nation's participation in World War II, yet the people were restless. They were tired of controls at that time. So, they returned a Republican Congress to office, to the surprise of a good many people, including most Republicans, themselves.

Yet, there is a lesson to be remembered in this for both parties. It was only two years after 1946 when the pendulum again swung. A cocky Republican candidate for President, Tom Dewey, went down in defeat before the tireless campaigning of Harry Truman in 1948. The lesson here is that political winds can shift very quickly, when the prevailing mood of the public is one of restlessness.

We see in Great Britain, today, a good example of that. Just a few months ago the British Socialist Labor Party was riding high. It had captured every major contested Parliament by-election without exception for two years. The Laborites were, therefore, clamoring for a general election ahead of the statutory period in order to overthrow the Conservative government. Today, with British recovery on the upswing, it is the Conservatives who are confidently planning for an election even before their present period in office expires.

And, so, those who would use the results of our own Nov. 4 as an argument for burying the Republican Party would do well to contemplate this record of fickle conduct of the voting majority. Perhaps a more optimistic view would be that this periodical hunger for a change, for the sake of a change, is in itself evidence of maturity and independence of partisanship.

Ike's Vanishing Coattails

One of the most interesting performances of the recent campaign was that of President Eisenhower himself. In the closing weeks, he took to the stump and vigorously called on the voters to elect the Republicans—all Republicans—because they were Republicans. It did not come off and perhaps the reason it did not come off was because it was out of character for Mr. Eisenhower.

One of the reasons for Ike's great personal popularity in the past was his detachment from party politics. This was due to his temperament as well as his training as a soldier. A good many people liked him and voted for him precisely because they sensed in Eisenhower a sort of contempt for the mean calculations of peanut professional politics.

So when Ike hit the trail on a strictly partisan basis, a good many voters could not recognize the old Ike. In any event they did not follow his advice. The Republicans, therefore, are presented with the problem of healing a good many internal wounds before the 1960 election, if they are going to field a team with a winning chance at that time.

But while the Republicans have problems of their own, any seasoned observer in Washington could quickly put his finger on a much greater problem looming for the Democrats. The rift between the North and the South wings is bound to grow wider during the coming two years. Victory at the polls and a bigger majority in Congress can only make the respective factions more noisy and determined to have it out.

If the 1960 Democratic national convention turns out to be a feast of love and harmony, it will be a miracle that nobody now expects. On the contrary, you can get even money almost anywhere in Washington today that Paul Butler will not be the Democrats' boss six months from now, following his recent invitation to the Southerners to get out of the party if they don't like his leadership and north-wing policies.

What's Ahead for Business?

All this is by way of background for the big question every businessman is asking. Will the next Congress, heavily dominated by the Democrats, go all out for soak-the-rich taxation and other anti-business legislation? Will the labor bosses be so firmly in control that the private enterprise system of the nation will be undermined?

The answers are likely to be that all of these things will be proposed and bitterly fought for in the next Congress. But there still is the man in the White House for another two years with a pen on his desk. He is in a position to veto any or all wide-eyed radical schemes which the G.O.P. campaign orators were so recently deploring.

What about overriding such vetoes? Ike's record for making his veto stand up in Congress has been second-to-none for any President in office during the twentieth century. This writer does not look for that record to be seriously compromised during the next two years. On the contrary, because the average Republican political views these days are scarcely distinguishable from those of a middle-of-the-road Democrat, we may well see a continuation of the moderate Democratic-Republican coalition which has really controlled Congress throughout most of Mr. Eisenhower's term in office.

One important detail to remember in this connection is that the Southern Democrats, by virtue of seniority, still control most of the key committees. And that well-known Texas firm of Lyndon Johnson and Sam Rayburn will still be doing business at the same old stand for another two years, barring accidents of human frailty.

And so on the whole, it would behoove businessmen throughout the nation to take a hopeful view of the situation which will still be "well in hand," despite the sensational talk to the contrary. Higher corporation taxes will be talk, but not action. More public spending—except for necessary military and internal requirements—will not be necessary in view of the economic recovery. Two years from now the same restless spirit of the voting majority could very well veer in the other direction.

FCC Is Still on the Carpet

One arm of Congress, which will be doing business at the old stand even before the new Congress meets, is that group with the strange name — the House Subcommittee on Legislative Oversight. Chairman of the committee, Representative Oren Harris (D., Ark.), announced on Oct. 29 that hearings would be resumed on Nov. 12 in Pittsburgh, Pa. The House investigators plan to question former chairman of the Federal Communications Commission, George C. McConnaughey, about rumors of improper influence in a TV license decision in the Pittsburgh area while McConnaughey was still on the board.

This is the so-called Channel 4 case, which involves charges that one of the applicants tried to influence former Chairman McConnaughey with an offer to throw law business to his son's firm. These charges were aired before the subcommittee last September. But one of the House's investigators, Oliver Eastland, has actually testified on this. So, the subcommittee decided to run the matter down for the purposes of the record.

It is probably a good thing that the hearings were put off until after the elections when a presumably more calm atmosphere will obtain. That is because one of the personalities involved in this case was the Mayor of Pittsburgh, David L. Lawrence, a power in the Democratic party. Lawrence says that his correspondence about the Pittsburgh television license merely followed a pattern of advocating more TV service for his home city.

(Please turn to page 54)

Recent Quotations of Telephone Stocks

	10/31/58 BID	10/31/58 ASKED	10/1/58 BID	10/1/58 ASKED
Anglo-Canadian Telephone Co.	37	37¾	34½	35
California Interstate Telephone Co.	13⅝	14⅛	13¾	14
California Pacific Utilities Co.	31¾	32¼	31⅛	31½
California Water & Telephone Co.	23⅜	23¾	22⅞	23
Carolina Telephone & Telegraph Co.	152 Bid		152½ Bid	
Central Telephone Co.	24½	25	23⅜	23½
Chenango & Unadilla Telephone Corp.	23½	25	21	24
Cincinnati & Suburban Bell Telephone Co.	87½	88¼	86	86½
Commonwealth Telephone Co.	18	18½	17½	18
Florida Telephone Corp. Class A	27¾	28½	28½	28¾
General Telephone Corp. Common	53½ (Last Sale)		52⅜ (Last Sale)	
Indiana Telephone Corp.	17½	19½	17	18½
Inter-County Telephone & Telegraph Co.	50	52	49	49½
Inter-Mountain Telephone Co.	15¾	16¼	15⅜	15⅝
Lincoln Telephone & Telegraph Co.	56 Bid		55 Bid	
Middle States Telephone Co. of Illinois	21½	22½	21¾	22½
North Carolina Telephone Co.	$1.00	$1.10	$1.03	$1.05
Northern Ohio Telephone Co.	39	39½	38½	40*(xd)
Peoples Telephone Co.	88 Bid		88 Bid	
Rochester Telephone Corp.	21	21⅜	21⅛	21½
Southern Nevada Telephone Co.	20½	21½	20¼	21
Southern New England Telephone Co.	40¼	40⅝	40⅛	40⅜
Southwestern States Telephone Co.	25⅝	26	23⅝	23¾
Telephone Service Co. of Ohio Class A	133	136	134	137
Tidewater Telephone Co.	23½	24½	23	24
United Utilities, Inc.	27	27⅜	27	27¼
West Coast Telephone Co.	21¼	21⅝	21⅝	21¾
Western Light & Telephone Co., Inc.	38	38½	36⅞	37¼

*(Ex-stock dividend)

(Quotations supplied by Merrill Lynch, Pierce, Fenner & Smith)

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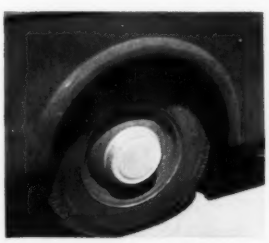
Right side view shows telephone compartmentation including a place for the water cask. Tent carrier is mounted over the cab under the ladder. Body is mounted on 1 or 1½-ton chassis . . . has dual rear tires.

Left side view reveals telephone compartmentation and durable doors. Vertical doors have pressed-in reinforcing cups, concealed hinging and door checks. All doors have the exclusive Holan indented handle.



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Report of the USITA Engineering Committee

By CHAIRMAN P. H. HENSON*

[EDITOR'S NOTE: *In the Nov. 1 issue we presented the "Report of the USITA Accounting Committee," which was made at the recent convention of the United States Independent Telephone Association. On this page we are publishing the "Report of the USITA Engineering Committee." In the Nov. 18 issue, we will present the reports of the USITA commercial, plant and traffic committees.*]

THIS is a report of the Engineering Committee of the United States Independent Telephone Association on its 1957-1958 activities. Our second year of operation has now been completed. In many respects, this association year has been similar in nature to our first year of operation in that we have participated in a number of significant undertakings and have registered several noteworthy accomplishments. Further, plans have been formulated that will most certainly lead to later and greater accomplishments. For purposes of identification, this report will be subdivided to present the activities of the general committee and the five sub-committees separately.

(1) General Committee

At the outset of the association year, we were favored with the assignment of three new members to the general Engineering Committee. The new thought and ideas introduced by these members have had a most beneficial effect on our operations. We were also privileged to have two new subcommittees formed under the Engineering Committee. These subcommittees on Transmission and Protection and on New Techniques and Devices will surely make contributions of importance to the association once plans now being formulated are implemented. A total of 10 new members were assigned to the five subcommittees, thereby injecting a wealth of new ideas.

The general committee has occupied this association year by acting on general engineering problems and attempting to stay ahead of the work of the five subcommittees. The general engineering problems were concerned largely with the evaluation of new products and equipment. Several manufacturers sought advice on products under development. In keeping with association policy, the principle of operation or design was evaluated and not the end product itself.

The report of the Engineering Committee submitted to the Mar. 10-11, 1958 meeting of the USITA board of directors indicated the possibility of preparing and distributing a brochure concerning the techniques involved in making mortality studies, conducting appraisals and establishing depreciation rates. With the publication of the book "Depreciation—History and Concepts in the Bell System" by the American Telephone & Telegraph Co., this action does not now appear necessary. The publication of a fundamental planning text is still under active consideration. The proposal to publish a specification on underground distribution systems has been rejected as being impractical.

A meeting of the general Engineering Committee was held in Chicago on May 20-21, 1958. The meeting was called for the purpose of (1) Finalizing the outline of duties and responsibilities for all subcommittees, (2) making preparations for the Engineering Conference at the national convention, (3) discussing specific activities of the sub-committees, and (4) coordinating activities with the USITA Plant Committee. These and other related objectives were accomplished.

(2) Radio and Carrier

The Sub-committee on Radio and Carrier offers the following report on activities in the radio field since its last report. Many of the activities previously reported as pending have now been completed, while certain of these actions continue and grow in importance. The FCC has also initiated new actions of interest to Independent telephone companies during this past year. The Committee has had the able assistance of Tom Warner, Radio Engineer on the USITA staff in Washington.

The Telephone Maintenance Radio Service was established by the FCC (under the Industrial Radio Services of its Safety and Special Services Division) through its order of June 23, 1958 in Docket 11991. Nineteen frequencies were allocated for this purpose; 14 exclusively for telephone company use and five on a shared basis. The five frequencies in the 27 Mc region appear to be of little value to our companies as they will be shared with all other mobile services and ISM radio services. This was the final result of the pending action in Docket 11991 reported last year and to proceedings from previous years.

This same order established another new service, the Business Radio Service, which had been opposed by the association. However, the terms of eligibility of this service are broad enough to include telephone companies as eligible users. Thus, although the Telephone Maintenance Radio Service can be used only for telephone company activities, any of our companies having both tele-

*Mr. Henson is Chief Engineer of the Lincoln (Neb.) Telephone & Telegraph Co.

phone and power maintenance radio requirements can apply under the Business Radio Service and combine such operations into one system. Another new service, the Manufacturers Radio Service, was also established by this order.

The use of these frequencies by the telephone companies became effective Aug. 1, 1958. . . . One of the requirements connected with applying for frequencies in this service is a "frequency clearance" letter from an industry coordinating group. Such a group has been formed: the Telephone Industry Radio Coordinating Committee with the USITA's radio engineer serving as secretary.

A second action of major importance to all Independent companies was the threatened loss of the frequency band 890-940 Mc for point-to-point service. Docket No. 11866, initiated by the FCC in 1957, was concerned with the establishment of regular allocations of the frequencies between 890 Mc and 30,000 Mc. Witnesses for this association presented testimony outlining the present and continuing importance of the frequency band 890-940 Mc to the Independent telephone industry for point-to-point inter-exchange circuits.

In April, 1958, the commission, without prior announcement, released a Memorandum Opinion and Order immediately transferring to government allocation several bands of frequencies for radio-positioning uses based on urgent national defense needs. One band so transferred was the 890-940 Mc band presently being used by many Independent companies.

However, use by telephone company stations already licensed was to be permitted until 1961 and after that date permitted subject to the conditions that the fixed stations of the telephone companies cause no harmful interference to government operations and would accept interference from ISM operations as well as government. No new stations would be authorized in this band. No provision of an alternate band was offered in this order.

The association filed a petition for Reconsideration and Stay of this order until suitable frequencies for reallocation of stations operating in the 890-940 Mc could be found. It was also recommended that the 50 megacycles immediately below 890 Mc be so reallocated. On July 31, 1958 the FCC released a further order denying this petition along with several others filed by individual telephone company users of the 890 Mc band as well as petitions from other services protesting portions of this original order.

However, in its denial the commission referred to the request of one petitioner for the allocation of the band 840-890 Mc as a replacement by indicating this could more properly be considered under the commission's pending Docket 11997, Order of Inquiry into the allocation of frequencies between 25 Mc and 890 Mc.

In the meantime, the FCC adopted a Notice of Proposed Rule Making in Docket 12404 which recognized the problems arising from its April Memorandum Opinion and Order, particularly with respect to the loss of the 890 Mc region by the communications common carriers. It requested comment on its proposals to permit some limited used by telephone companies of the 942-952 Mc band and the shared use of the 2110-2200 Mc band.

The association filed comments in response to this notice pointing out that 942-952 Mc proposal did not offer a solution to the present dilemma of Independent telephone users of the 890 Mc frequencies, because it did not permit expansion of service and proposed bandwidth was too small to permit development of multi-channel systems of sufficient capacity.

The association also suggested that, while the band 2110-2200 Mc was not a suitable replacement for the 890-940 Mc band, it could be used only if made exclusively a communications common carrier band rather than a shared band as indicated in the proposal.

At the same time the association filed a Petition for Further Proposed Rule Making requesting that the band 840-890 Mc be considered under Docket 12404 as another solution to the 890 Mc problem. No action has yet been taken by the commission in response to our comments in Docket 12404 or our petition to include the band 840-890 Mc in this proceeding.

Late in November, 1957, comments were filed in response to the commission's Order of Inquiry in Docket 11997. In this proceeding the present allocation of frequencies between 25 Mc and 890 Mc will be reviewed. Also, the commission will seek to determine the existing and future needs for frequencies within this range by both present and potential users and the systems of allocation and techniques of operation which might produce the most efficient use of this part of the spectrum.

On July 17, 1958, the commission issued a Notice of Hearing in this proceeding requesting the names of witnesses and detailed outlines of the testimony to be presented. This subcommittee is now completing plans for association representation at this hearing. Our witnesses will be prepared to testify as to the need of Independent companies for frequencies in the 890-940 Mc region to provide interexchange and other point-to-point facilities as well as other frequencies required by the orderly development of Domestic Public Mobile Radio Service.

Other actions of interest to the Independent telephone industry are as follows:

Docket No. 10988. The FCC issued a Notice of Inquiry as a continuation of this docket concerning the use of the frequency bands 10-14 Kc and 90-110 Kc by radio-positioning stations. Included in the notice were indications that there might be requirements for control of aero-photo operations, the aerial application of insecticides, etc., and radio surveying in general which might require mobile radio-positioning stations of relatively high power. USITA filed comment on June 12, 1958 pointing out that frequencies below 500 Kc are used to channelize circuits on wire carrier operations and suggesting that the commission consider suitable restrictions on the operations of stations on these frequencies when in close proximity to wire line circuits. No further action has been taken by the commission.

Docket No. 11164. On Aug. 4, 1958, the commission released a report and order in this docket which liberalized the use by TV stations of their own private microwave facilities. This proceeding began with a Notice of Proposed Rule Making in 1954 as an outgrowth of a petition by a North Dakota TV broadcast station to provide its own television intercity relay station on microwave frequencies. The commission's original rule provided that private television relay stations installed by TV stations would be a temporary measure until such time as adequate common carrier facilities were available.

In 1954, USITA filed comments opposing any change in the commission's rules concerning this service. By this report and order, the commission modified its policy with respect to the licensing of private television relay stations so as to permit TV broadcast stations the option of operating their own relay stations or obtaining the service from communications common carriers.

A restriction was included providing that these private systems would not interconnect with or be used as intermediate links in common carrier intercity television transmission facilities.

Docket 11972. This docket, concerning the lease and maintenance of radio systems as covered under contemplated tariffs filed by AT&T, was initiated in 1957. Hearings began on Jan. 14, 1958, with USITA appearing on behalf of the Independent telephone industry and represented by its attorney with its radio engineer as an observer. After much discussion and little outward progress these hearings were continued on Mar. 31 to a date to be set by further order. That order has not yet been issued.

Docket No. 11990. On May 12, 1958, the commission released its report and order in this docket which made certain reallocations of frequencies within the Public Safety Radio Service and established a new service, "Local Government Radio Service." The original pro-

posal for an Interstate Highway Radio Service was dropped as a separate service but included in the existing Highway Maintenance Radio Service.

Docket No. 11995. The commission released two reports and orders in this docket concerning frequency allocations and use in the Domestic Public Radio Service. These Orders deleted frequencies originally reserved for Western Union "telecar" operations and made them available as an additional radio channel under the zone allocation plan and frequencies for one-way signalling services. They also established new radio channels through channel splitting, provided frequencies in the 450 Mc band for the Domestic Public Land Mobile Service and made all frequencies except those in the 30-50 Mc band available to the Rural Radio Services on a secondary basis.

Docket No. 12169. This proposed rule making proceeding initiated by the commission in September, 1957, and concerned primarily with reducing the separation between assigned frequencies in the various mobile service bands, became intermixed with several other proceedings in determining the allocation of the additional channels derived by this reduction. The channel spacing of the 35 Mc and 43 Mc frequencies in the Domestic Public Land Mobile Service were not affected by this order.

Comment was filed by USITA supporting the commission's proposals, specifically with reference to the telephone construction and maintenance frequencies proposed. There have followed, since Dec. 20, 1957, a series of reports and orders of the commission confirming the reallocations of frequencies to the various services as a result of the orders and reports in other docket proceedings. For example, the establishment of the Telephone Maintenance Radio Service in *Docket 11991* has its frequencies confirmed under Supplemental Order Number Six of this docket, released June 23, 1958.

Docket No. 12263. In December, 1957, the commission released the first of a series of notices of inquiry into the revision of international radio regulations which are to be considered at the International Telecommunications Union Conference at Geneva, Switzerland in 1959.

USITA filed comment indicating a need by Independent telephone companies for frequencies in the 890 Mc region for interexchange circuits and requesting that an international allocation be provided. In addition, the association's radio engineer served as the Independent telephone industry representative on state department committees considering similar proposals.

Docket No. 12322. On Feb. 13, 1958, the commission released a proposed rule making to permit the use of frequencies allocated to communications common carriers for control and repeater functions and to establish other technical restrictions on methods of signalling.

USITA filed comments opposing these proposals because of the detrimental affect they could have upon the present methods of providing mobile service, and also requested that the other technical proposals be broadened so as to permit a variety of signalling methods to assist the continued development of mobile dialing.

Docket No. 12387. On Apr. 8, 1958, the commission adopted a notice of inquiry into the marine safety aspects of all stations which may be authorized to operate on board vessels. Because many land mobile services are also authorized to utilize stations aboard ships the issue was raised as to whether the land stations of these services should also be required to monitor maritime frequencies and the mobile stations aboard ships required to operate on maritime frequencies also. The Domestic Public Land Mobile service is permitted to render service to ships under certain restrictions. On July 11, the association filed comment with the commission in response to this notice of inquiry indicating that such requirements should not be applicable to stations in the Domestic Public Land Mobile Service.

Docket No. 12443. On May 22, 1958, the commission released its notice of inquiry into the impact of community antenna TV systems and other types of auxiliary TV operations on the orderly development of television broadcasting. One of the issues raised in this inquiry was, "Would it constitute a legally valid exercise of the FCC's regulatory jurisdiction over common carriers to deny authorization for common carrier microwave, wire or cable transmission of TV programs to CATV systems on the growth of adverse competitive impact on the construction or successful operation of local or nearby television stations?"

A questionnaire was sent out to all USITA members to determine the extent of interest they might have in the CATV business itself, or in the furnishing of pole facilities to such companies. About 20 per cent of the replies indicated CATV systems were permitted to use telephone companies' pole facilities and only one company indicated that it was actively engaged as a partner in a CATV operation. The association filed comments with the commission in opposition to the issue as stated. No further action has been taken by the commission.

Docket No. 12517. On July 8, 1958, the commission released a notice of inquiry in this docket concerning the extent to which FM broadcast stations might engage in specialized non-broadcast activities on a multiplex basis. This notice indicated possible activities which could place an FM station in direct competition with common carriers as well as many other private radio services. Comments opposing any expansion of FM broadcast station activities beyond the furnishing of broadcast entertainment or functional music services will be filed by the association.

Docket No. 12573. On Aug. 5, 1958, the commission released a notice of proposed rule making to amend its rules concerning the use of the Form 452-C—Transmitter Identification Card. This change proposed would permit the use of a plate of metal or other durable material in place of the actual FCC card from so long as this plate displayed all of the information required to be shown on FCC Form 452-C. The association has filed comment in favor of this change.

Motorola Petition. On July 24, 1958, Motorola, Inc. and six others, petitioned the commission for an inquiry, investigation and rule making in the Domestic Public Land Mobile Radio Service. Although the major emphasis of this petition was directed at the commanding position of Bell companies in this field it raised issues concerning frequency allocations and interconnection between the miscellaneous common carriers and the telephone companies which are also of concern to Independent telephone companies.

The association has filed comment in general opposition to this petition suggesting that the issues raised could readily be considered in connection with *Docket 11997*, rather than instituting a separate proceeding. No action has been taken by the commission on either the petition itself or the comments filed by the association and AT&T.

Administratively the work of this committee has been immeasurably assisted by the addition of a radio engineer to the staff of the association's headquarters in Washington. The continuing increase in the use of a radio for both mobile and interexchange purposes has indicated a need for a Bell-Independent radio coordinating committee.

Tentative agreement has been reached with AT&T concerning such a committee to deal with radio problems of an industry-wide nature with the Subcommittee on Radio and Carrier of the association and representatives from the radio engineer's office of AT&T as members.

As previously mentioned in connection with the new Telephone Maintenance Radio Service, one function of this committee is already in operation. One pamphlet, "Radio Planning Considerations for Telephone Companies," has been published and this is to be followed by others concerning mobile and microwave planning and operation. —M. L. Donaldson, chairman; B. L. Arnold, and R. H. Herrick.

(3) Direct Distance Dialing

Two new appointees, Harry Barrows and Herman Kleinhammer, were welcomed to this sub-committee at the outset of the association year.

A meeting of this sub-committee with AT&T and Bell Lab. representatives on Aug. 5 and 6 constituted our major efforts for the year 1958. . . . The . . . . committee members participated in a profitable exchange of views based upon questions submitted by manufacturers and operating company members of USITA. It seemed appropriate to invite a representative of REA to sit in our conferences as an observer. Maynard Knapp, central office equipment engineer—REA Telephone Engineering Division, was designated as the observer who attended the meeting.

(Please turn to page 56)

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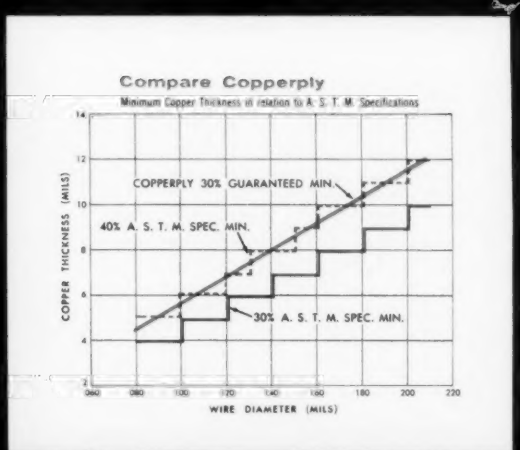

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NATIONAL-STANDARD, Niles, Mich.; *fine wire, stainless, music spring and plated wires, flat and tubular braid and wire cord*
WORCESTER WIRE WORKS, Worcester, Mass.; *music spring, stainless and plated wires, high and low carbon specialties* • **REYNOLDS WIRE, Dixon, Ill.;** *industrial wire cloth*
WAGNER LITHO MACHINERY, Secaucus, N. J.; *metal decorating equipment* • **ATHENIA STEEL, Clifton, N. J.;** *flat, high carbon spring steels*
CROSS PERFORATED METALS, Carbondale, Pa.; *industrial, commercial, and decorative perforated metals*

REA Authorizes Additional Telephone Loan Allocations

THE Rural Electrification Administration has approved the following telephone loans:

Four States Telephone Co., Brownwood, Tex.; $635,000; Oct. 10.

These funds will be used by the new borrower to furnish initial service for 388 rural families and to improve service for 747 existing subscribers.

As a nucleus for this new service, the Four States company expects to acquire the following telephone properties now owned and operated by the Southwestern States Telephone Co.: the Menard exchange, the London exchange and rural lines out of the Llano exchange. These facilities now furnish common battery, magneto and dial service. Proposed improvements by the borrower include new automatic offices at London and New Bluffton (rural area outside of Llano). When completed, the system will consist of three exchanges.

Chester H. Loveland is president and D. T. Strickland is general manager of the Four States Telephone Co.

•

Cherokee Telephone Co., Donalsonville, Ga., $406,000; Oct. 13.

This loan will enable the company to furnish initial service to 346 rural families and to improve service for 242 existing subscribers. The existing subscribers are receiving dial and magneto, service through the Ocmulgee Telephone Co. and the Milan Telephone Co. The borrower proposes to acquire these facilities and consolidate them with its system. Construction plans of the Cherokee company include new automatic central offices to replace existing switchboards at Milan and Rhine. The borrower is considering service without toll charge between the Milan and Rhine exchanges.

A portion of the loan funds will be used to complete the authorized system. REA loans to this borrower now total $903,000. These funds will enable the company to furnish new and improved service to 1,577 subscribers. The completed system will consist of six exchanges of which four are in operation serving approximately 600 subscribers.

Mary V. Quattlebaum is president and manager of the Cherokee Telephone Co.

•

Farragut (Ia.) Telephone Co.; $87,000; Oct. 13.

These funds will enable the borrower to improve service for 164 subscribers and to furnish initial service for 25 families. The existing subscribers are now receiving magneto service from the Pacific Junction Mutual Telephone Co. The borrower has recently acquired these telephone properties and plans to convert the magneto facilities to automatic operation and integrate the two systems. The borrower's construction schedule includes a new automatic central office at Pacific Junction.

With its two REA loans, totaling $221,000, the company will be able to furnish new and improved service to 562 rural subscribers. The Farragut exchange is now furnishing dial service to approximately 330 subscribers.

R. A. Sells is both president and manager of the Farragut Telephone Co.

•

Project Telephone Co., Worden, Mont.; $49,000; Oct. 13.

These funds will be used to provide facilities to serve 38 new rural subscribers now without telephones in the present service area, and to complete the authorized system. This borrower has received $329,000 in REA loans which will enable it to furnish new and improved service to 674 rural subscribers. The two exchanges of the system have recently been cutover to automatic operation.

Fred Rauchle is president and W. F. Farnes is manager of the Project Telephone Co.

•

Central Arkansas Telephone Co-op., Donaldson; $59,000; Oct. 14.

These funds will be used by the borrower to provide facilities to serve 118 rural families now without telephone service. In addition, the loan will finance completion of the previously authorized system. With its two REA loans, totaling $278,000, the cooperative will be able to furnish new and improved service to 549 rural subscribers. The completed system will consist of automatic exchanges at Bismarck and Donaldson.

J. D. Tisdale is president and D. M. Borke is manager of the Central Arkansas Telephone cooperative.

•

Dixie Telephone Co., Claxton, Ga.; $665,000; Oct. 17.

These funds will enable the borrower to furnish initial service for 563 rural families and to improve service for 472 existing subscribers. The present subscribers are now receiving dial and magneto service from the Farmers Telephone Co. at Springfield, which the borrower plans to acquire, rehabilitate, and expand.

New automatic central offices are scheduled to replace existing facilities at Rincon and Springfield. The expanded facilities for the 472 existing subscribers in Effingham county are noncontiguous to the borrower's present operating area.

The three REA loans to this borrower, totaling $1,079,000, will make possible new and improved service to 1,805 rural subscribers. Of the five proposed automatic exchanges, those at Alamo, Collins, and Uvalde are now in operation.

H. C. Hearn Jr. is both president and manager of the Dixie Telephone Co.

•

Ringgold (Ga.) Telephone Co.; $802,000; Oct. 17.

The new borrower plans to use these funds to furnish initial service to 1,269 rural families and to improve service for its 783 existing subscribers. At present the company furnishes dial service.

The borrower is now constructing a new combined automatic central office and headquarters building to serve the rehabilitated and expanded system. Provision is made in the loan to reimburse the company for this construction. The present automatic switchboard and some reuseable outside plant will be removed and salvaged.

James E. Evitt Jr. is both president and manager of the Ringgold Telephone Co.

•

Champaign County Telephone Co., Champaign, Ill.; $166,000; Oct. 17.

With loan funds the borrower proposes to acquire, rehabilitate, and integrate facilities of the Seymour Telephone Co. which now provides magneto service. The Champaign company proposes to construct a new automatic central office in Seymour to replace the existing magneto facilities.

A portion of this loan will be used to complete the system authorized under prior loans. REA loans to this borrower amount to $2,618,132 which will enable it to provide new or improved service to 5,524 subscribers. Fifteen of the proposed 17 exchanges are in operation serving approximately 4,900 subscribers.

(Please turn to page 59)

Instrument Kits for Telephone Use

By HAROLD B. McKAY

Part 3—Vacuum Tube Voltmeters

A VACUUM tube voltmeter is a voltmeter which derives its operating power from a vacuum tube amplifier. It may be used in cases where a very high input resistance is required. The probe usually connects into a grid of a vacuum tube and hence presents an input resistance of 10 or 11 million ohms. This is of advantage in cases where the few thousand ohms input to an ordinary volt-ohm-milliammeter might load down the circuit under test and disturb its operation. The vacuum tube voltmeter probe may be attached to the circuit without disturbing it.

In this sort of application, the function of the tube is largely that of isolation, that is, isolating the meter from the circuit under test. Little amplification is required from the tube for this purpose.

Another type of application calling for a vacuum tube voltmeter is where the voltage to be measured in the circuit is too small to move the needle on a meter when connected to it directly. In this case, the vacuum tube voltmeter may consist of several stages of amplification which will raise the measured voltage to a point where it can show on the meter. Vacuum tube voltmeters are made which will measure ac, dc, or both. Some are good at audio frequencies, some at ordinary radio frequencies, and some at ultra-high frequencies, some in addition to their voltage measuring capabilities may also incorporate an ohmmeter and may be called electronic volt ohmmeters.

A common type of factory-made vacuum tube voltmeter, which is widely used in telephone offices, measures ac volts only and covers a range from —50 to +50 decibels. This finds its greatest application in measuring carrier frequencies. This type of instrument is not widely used by radiomen and hence most kit manufacturers do not supply an instrument of this type. At the time of this writing only Heathkit was known to make one which would go down to the low range of decibels necessary to measure carrier strength in telephone systems.

Popular Types

Probably the most popular type of vacuum tube voltmeter is the kind which will measure ac and dc volts with high input resistance and which can also be used as an electronic ohmmeter. Typical of this is the Paco Model V-70, which was selected for trial for these articles. The price on this was $31.50 in kit form. It is a two-tube circuit which handles seven voltage ranges, 0 to 1.5, 5, 15, 50, 150, 500, and 1,500 full scale. It has the same ranges on both dc and ac and in addition has a peak to peak scale printed on the meter face which matches the above RMS values. It has a sensitivity of over 7 megohms per volt on the 1.5 volt range and an input resistance of 11 million ohms. It is good for a frequency response of from 40 cps to 4 mc. Its accuracy is about 5 per cent.

The Paco vacuum tube voltmeter. It will measure ac, dc and ohms.

As an ohmmeter, it has seven ranges between 0 to 1,000 ohms and 0 to 1,000 megohms. Its scale transfer accuracy is about 1 volt.

A function switch permits the user to switch from ac to —dc to +dc to ohms. In addition the instrument comes equipped with a special probe which contains a slide switch and a resistor. The switch is operated with the thumb when switching from ac or ohms to dc. Ordinarily the instrument is plugged into the 110-volt power source which supplies the energy to operate the vacuum tubes. Power for the ohmmeter, which is sent through the measured circuit, comes from a 1½ volt flashlight cell. The power supply consists of a power transformer and a selenium rectifier which supplies dc for the vacuum tubes.

The tubes are a 6AL5 which is used as a peak to peak rectifier and a 12AU7 which is used in the bridge circuit which operates the meter. The Paco vacuum tube voltmeter is well equipped with adjustments for calibrating the instrument. In addition to the usual ohms adjustment and zero adjustment, there is also an ac balance, an ac calibrate, a —dc calibrate and a +dc calibrate.

Wiring of the kit is accomplished by means of the usual large picture charts and a set of numbered steps which the technician checks off as he completes. AC calibration can be made against the ac line or against another instrument. DC calibration is done to a special check mark on the meter face in conjunction with a 1½ volt dry cell. The book includes trouble shooting hints and instructions on how to use the instrument. It took TELEPHONY's technician about nine hours to put this unit together and get it calibrated. Like the other instrument kits used for this series it was thoroughly tested in telephone applications. It was tried in a number of cases where the use of a voltmeter was called for and in other cases where while not required it would make the job easier. It performed very well.

Decibels

The Paco vacuum tube voltmeter was calibrated on a basis of 0.775 volts on a 600-ohm line which is to a telephone man's liking. The base range was —6 to +16 db, though several other ranges could be switched in which would go as high as +44 to +66 db. Like the volt-ohm-milliammeter these higher scales are of principle value to radio-

(Please turn to page 63)

Has your toll timing system kept pace with these CALCULAGRAPH IMPROVEMENTS?

NEW COLOR-CODED HANDLES

This "visual aid" to better accuracy is a big help to busy operators—excellent for trainees, too. These new handles in color—green for start, red for finish, can be installed in minutes.

NEW SETBACK HANDLE

Now you can use ANY SIZE toll ticket—in operated position handle cannot damage toll ticket. This new feature permits Calculagraph to be used with any card system.

NEW 60-MINUTE DIAL

Busy operators can now handle more calls more efficiently because there's no need to depend on memory or manual computations on long conversations. Assures you, too, of all charges due on every call.

Check your own switchboard now. If you don't have all these Calculagraph improvements, it's time to modernize and incorporate these benefits into your toll timing system.

Your busy operators will like these easier-to-use color-coded handles; the 60-minute dial will eliminate possible human errors in recording long conversations, saving you "lost-time" dollars; and, you will like the flexibility in card sizes permitted by the set back handle. They all add up to faster, easier, more accurate toll time recording.

Call your Calculagraph distributor today. He'll be glad to discuss your modernization plans with you.

FOR LONG-TIME CALCULAGRAPH USERS ONLY

If you are now using the old "round-type" Calculagraphs, you can easily convert to the rectangular Model 33 (shown here) with the convenient adapter plate that requires just a few minutes to install.

CALCULAGRAPH Company

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TELEPHONE: HUMBOLDT 2-0213

MANUFACTURERS OF ELAPSED TIME RECORDERS FOR OVER 65 YEARS

The thrifty answer to top performance...

Low-Cost Copperweld

O-Eighty-Thirty

TELEPHONE LINE WIRE

O-Eighty-Thirty is specifically designed to give you thrifty savings and top performance for your subscriber loops and secondary toll lines. Its initial cost is practically the same as ordinary wire. When you string this light-weight, easy-to-handle line wire, you gain substantial economies—lower installation and maintenance costs as well as reduced expenditures for poles and hardware.

Excellent voice transmission is assured with O-Eighty-Thirty. In fact, its talking qualities are far better than any other high-strength wire of comparable size. In addition, it's non-rusting—has permanent high strength that permits safer long spans. As a bonus value, O-Eighty-Thirty is ideally suited for conversion to carrier circuits.

For prices, sag data and staking tables, write us today.

COPPERWELD STEEL COMPANY

WIRE AND CABLE DIVISION *Glassport, Pa.*

For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York

SOLD BY LEADING DISTRIBUTORS

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

THE FOLLOWING facts on "The Art of Getting Along" are by an anonymous author but we believe that they are worth repeating. It will not hurt any of us to practice these rules and it might do some of us a lot of good.

"Sooner or later a man, if he is wise, discovers that life is a mixture of good days and bad, victory and defeat, give and take. He learns that it doesn't pay to be a sensitive soul—that he should let some things go over his head like water off a duck's back. He learns that he who loses his temper usually loses. He learns that all men have burnt toast for breakfast now and then, and that he shouldn't take the other fellow's grouch too seriously.

"He learns that carrying a chip on his shoulder is the easiest way to get into a fight. He learns that the quickest way to become unpopular is to carry tales and gossip about others. He learns that most people are human and that it doesn't do any harm to smile and say 'good morning' even if it is raining.

"He learns that most of the other fellows are as ambitious as he is—that they have brains that are as good or better, and that hard work, and not cleverness, is the secret of success. He learns that it doesn't matter so much who gets the credit so long as the business shows a profit.

"He comes to realize that the business could run along perfectly without him. He learns to sympathize with the youngsters coming into the business because he remembers how bewildered he was when he first started out. He learns not to worry when he does not make a hit *every* time because experience has shown if he always gives his best his average will break pretty well.

"He learns that no man ever got to first base alone and that it is only through cooperative effort that we move on to better things. He learns that the fellows are not any harder to get along with in one place than another, and that 'getting along' depends about 98 per cent on himself."

•

We are advised that fast driving is the cause of nearly a third of all highway accidents. Here are some of the interesting survival odds in the event of a wreck:

If your speed is:	Your chance of being killed is:
0-10 mph	1 in 1,373
11-20 mph	1 in 936
21-30 mph	1 in 316
31-40 mph	1 in 97
41-50 mph	1 in 88
51-60 mph	1 in 31
61-70 mph	1 in 7
71-80 mph	1 in 2
Over 80	1 in 1

•

A wise man once said: "The only perfect people I know—I know very slightly."

•

It is reported that the Illinois Bell Telephone Co. is toying with an idea that removes the telephone from the desk top and locates it out of sight on a special panel designed also to contain loud-speaking equipment, and called the executive panel.

•

The Pacific Telephone & Telegraph Co. is presently testing about 43 Volkswagens for efficiency, economy and safety on the road. Of the 200 drivers who have been using the Volkswagen, 79 per cent reported hearing comments both favorable and unfavorable. The majority of the comments were favorable, however. On the favorable side, 56 per cent of the drivers said they heard that the company "showed good judgment in buying a small or economical car."

The group the drivers talked to consisted of friends and neighbors of the drivers, garage and gas station men, businessmen, car dealers, bystanders and customers.

Car dealers or salesmen were the only group who tended to be uniformly against the cars. Gas station men, friends and businessmen tended to favor the Volkswagens.

The drivers were also asked to express their own views on the small cars. Favorable features—economy and ease of handling—were mentioned by 71 per cent of the drivers.

Unfavorable items, primarily smallness and safety features, were mentioned by 45 per cent. Twenty-eight per cent commented on safety features of the Volkswagen.

Some of the safety comments from the drivers were that the car was too small for highway driving, poor visibility, too much shifting and no protection in accidents. Most of the drivers favored the Volkswagens for metropolitan driving but preferred a standard car for the highway.

•

A recent survey brings out the surprising fact that almost a third of the nation's 75,000 licensed civil aircraft are now owned by corporations and used exclusively for "company business."

Last year these "company planes" flew nearly 5 million miles. Thus, it is claimed that they accounted for more aircraft hours and more aircraft miles than the combined total of all domestic lines.

•

It is claimed that some men have ideas; other men have notions. How easy it is to mistake one for the other.

•

You can tell time by a watch of new design no matter how dark the night. This is an electrified watch which lights up at the press of a button.

It uses a wafer-thin battery and a minute light bulb to illuminate the face. It furnishes six to 12 months service on a charge.

The battery can be recharged by the use of a device that connects into a two-cell flashlight battery.

NUMBER 17
Toll grade. These insulators are employed for all exchange circuits and for all toll and trunk circuits that do not exceed ten miles.

Dependable ...in emergencies

When they're on the line, you can *depend* on their strength and uniform high quality.

When you order you can *depend* on prompt deliveries of what you need . . . when you need it.

Since 1870, when Robert Hemingray began mass production of screw-thread insulators, Hemingray has pioneered most of the insulator developments to keep pace with the requirements of the communication systems of the world.

Today, as always, Hemingrays are world standard for quality, and most of the overhead telegraph and telephone lines of the world are carried on *dependable* Hemingray Glass insulators. They are a product of Kimble Glass Company, subsidiary of Owens-Illinois, Toledo 1, Ohio.

HEMINGRAY INSULATORS
AN (I) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO

Directors of the Rocky Mountain Telephone Association are shown, standing, left to right: Donald Dickson of Rupert, Ida.; J. N. Christian of Pioche, Nev.; Rulon Callister of Delta, Utah; Ward Blazzard of Kamas, Utah; Mr. Reyher; and D. A. McLean of Denver, Colo. Seated, left to right, they are C. A. Blakeney of Carlsbad, N. M.; E. P. Corbin of Monticello, Utah; H. B. Norman of Gunnison, Utah; Mr. Baker; Grid Rowles of McCall, Ida.; Charles McLean of Kalispell, Mont., and Mr. Haas. Not shown are J. E. Tipton of Espanola, N. M.; C. M. Hart of Kingman, Ariz.; Earle Crandall of Pinedale, Wyo.; and M. O. Trego of Sundance, Wyo.

Public Relations Development Stressed At Rocky Mountain Convention

By DIANNE P. DRUCKER

THE PICTURE a subscriber forms in his mind at the mention of a company's name is that company's corporate image. The development of a favorable corporate image through public relations, should be the goal of all telephone companies, according to A. J. Barran of Spokane, Wash., who spoke before the convention of the Rocky Mountain Telephone Association which met on Sept. 16, 17, 18 in Salt Lake City, Utah.

This corporate image, according to Mr. Barran, is a mosaic. It might be made of clearly defined pieces presenting a picture of astute management, sound policies, excellent employes, good service, financial stability, unequivocal integrity, efficiency, and friendliness. Or, the tiles in the mosaic might have ragged vague edges which do not quite fit together thus creating an image of an ill-managed company with policies and practices degrading to all aspects of its operations and services.

How can a corporate image be built? Mr. Barran observed:

"It is built with the tools of the president, the public relations man, the personnel man, the business office representative, and each employe down the line. Each has a different set of tools to work with, but in the final analysis he or she has an integral part in constructing the complete corporate image. . . .

"Let us focus our attention for a moment on the part that the telephone man and woman down the line play in building a good corporate image. Although I have made no precise studies to prove it, I believe it is safe to assume that about 99 per cent of all personal contacts made by telephone company people are made by personnel in the lower levels . . . They may be the only business contact which a subscriber has with the company. His total impressions of company policies and management philosophies are formed as he conducts business at the 'grass roots' level of the organization. Regardless of how ethical and idealistic these policies and philosophies might be, good corporate image can only be attained when each employe has an insatiable desire to identify himself with these concepts.

"In every business contact we must do not only a good job, but find ways and means of putting a little extra into that job."

Over the years, the telephone business has projected an image of personal service, Mr. Barran said. He felt this was typified in its highest sense for many years by the hometown operators. They helped convey a picture of the local telephone company as a friendly, helpful and generous organization.

This image has been changed to some degree, Mr. Barran said, because of mechanization.

Mr. Barran mentioned several items which he felt should be part of a program to mitigate this condition. He said that first, an effective advertising and publicity program should be developed and beamed at the local level.

Sometimes molders of public opinion, who reside in rural areas, are overlooked because of their distance from local headquarters. Mr. Barran suggested that a systematic personal call plan should be developed so that these people are interviewed by telephone company personnel several times a year.

Discussing how balance sheets contribute to the corporate image, Mr. Barran discussed their effect on that important public, the shareowner. He said: "The entries in your balance sheet point up the financial position and integrity of your company. They size up in cold hard statistics your financial corporate image."

He went on to speak about the place of profit in this image. He felt that profit was a more comprehensible word to use to the public than rate of return.

"Let's start talking about making our business profitable and people will comprehend what we are aiming at when we are in a rate case," he said.

He urged that telephone companies educate the public to the fact that a company's profits are specifically limited through commission regulation.

How to contribute to the building of a good corporate image through good employe-employer relationships was the subject of the talk "Not for Bread Alone," by K. P. Todd, of Helena, Mont., plant vice president and general manager of the Mountain States Telephone & Telegraph Co.

He gave the results of some surveys which tried to find out what employes want from their jobs.

Although high pay may be the topmost incentive in choosing jobs, it seems, from surveys made by the Opinion Research Corp. of Princeton that it is far from the top among things employes value most after they have been on the job for a while.

Mr. Todd stated that the Opinion Research Corp. of Princeton, surveying several thousand employes in many industries, to determine the principal elements of job satisfaction, found the elements ranked as follows:

(1) Interesting work.
(2) Job security.
(3) Interest the company takes in the employe.
(4) Chances for advancement.
(5) Working conditions.
(6) The handling of grievances.
(7) Pay.

(Please turn to page 36)

Engaged in some animated conversation are K. P. Todd and A. H. Sweeney, both of Helena, Mont.; A. J. Barran of Spokane, Wash.; and E. C. Aaberg of Salt Lake City, Utah.

At the speakers' table are J. W. Baker of Coeur d'Alene, Ida.; Floyd L. Reyher of Haxtun, Colo., immediate past president of the Rocky Mountain Telephone Association; C. W. Haas of Big Timber, Mont., immediate past president of USITA; and Ray Ralston, data facilities engineer for American Telephone & Telegraph Co.

These telephone women are pictured at the start of the ladies' luncheon held during the convention.

Install It & FORGET IT

BATTERY CHARGERS

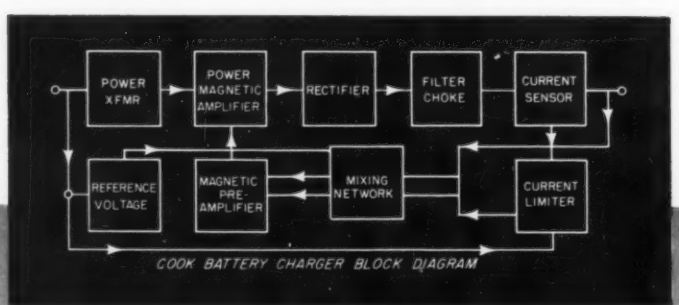
by COOK

WITH DIODE POWER RECTIFICATION AND TRANSISTORIZED VOLTAGE CONTROL

THE Cook battery charger is of the constant voltage type having a rated output of 49.5 to 53.7 volts for use with 23, 24 and 25 cells. The 12 amp and 24 amp models can be operated from a 110 volt or 220 volt single phase supply. The 25, 50, 75, 100, 150, 200 and 400 amp models are operated from 208 or 220 volts 3 phase supplies. The charger is of the magnetic amplifier type and does not use vacuum tubes, gas filled tubes, or motors whose life is restricted.

This charger will supply a closely regulated floating voltage of 2.15 volts per cell within the maximum optimum current charging range of the battery. When needed battery equalizing can be obtained through the use of a toggle switch mounted on the control panel which increases the regulated charging voltage to 2.33 volts per cell. Floating and equalizing voltages are regulated by a magnetic amplifier to within $\pm\frac{1}{2}\%$ for variations in line voltage and load. Under all conditions a current limiter restricts the maximum available current to a safe preset value without releasing the breaker.

A transistorized model of the Cook Charger also is available. This model features a transistorized voltage control circuit and voltage reference in conjunction with magnetic power amplifiers and hermetically sealed silicon rectifiers. The performance of this model is com-



COOK BATTERY CHARGER BLOCK DIAGRAM

DESIGN FEATURES

COMPONENT DESCRIPTION . . . Cook chargers use basic electrical and magnetic circuits and dependable extended life components such as hermetically sealed, solid state, silicon rectifiers and transistors, vacuum-impregnated transformers and reactors, vitreous-enameled wire wound resistors and potentiometers, and proven circuit protectors.

POWER TRANSFORMER . . . Transformers of Cook Telephone Quality, vacuum impregnated with conservative temperature rises . . . AC voltage supply taps accommodate standard range of voltages.

MAGNETIC AMPLIFIERS . . . Designed for long life and efficient operation and made to Cook Telephone Quality . . . precisely laminated and vacuum-impregnated to operate silently.

CURRENT LIMITER . . . Precisely constructed by Cook to Telephone Quality from special laminations to insure minimum temperature rise and long life, trouble free operation.

VOLTAGE REFERENCE . . . Automatically maintains a stable reference voltage which controls the output regulation.

FILTER CHOKE . . . Laminated and vacuum impregnated choke made to Cook Telephone Quality standards insure extended life, improved power factor, ripple output and minimum noise.

CONTROL RESISTORS . . . Wire wound, vitreous-enameled quality resistors.

CONTROL DIODES . . . Hermetically sealed silicon diodes derated to a fraction of their power and current ratings serve as primary control for the current limiter and output voltage regulation.

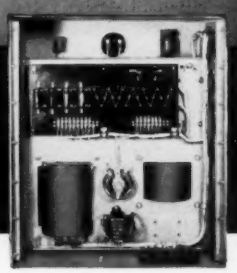
OTHER COMPONENTS . . . Indicating Instruments, Switches, Fuses, Circuit Breakers and other components are selected to meet Cook Telephone Product Quality . . . No charge alarm relay is optional.

CABINET . . . Rigidly constructed steel cabinet, finished in attractive grey hammerloid. Overall dimensions 30" H x 23" W x 14" D. Provisions exist for wall or rack mounting.

SILICON POWER RECTIFIER . . . Low forward drops (as compared to selenium rectifiers) reduce size of the magnetic components . . . hermetic sealing increases life and efficiency of rectifiers.

A view of the Cook Battery Charger with the lower front panel removed.

Rear view of the unit.



parable to that of the all magnetic controlled charger.

Cook chargers are completely enclosed in a rigidly constructed steel cabinet and attractively finished. Mounting and installation provisions are based on standard rack mounts. These units do not necessitate forced cooling because of incorporated design features which result in silent dependable operation. All controls, connectors and fuses are conveniently located inside the cabinet.

The Cook charger is a solid state device with excellent voltage regulation produced by a closed loop magnetic amplifier. AC voltage is supplied through an isolation transformer to a power magnetic amplifier whose output is rectified by silicon rectifiers and then filtered. The resulting output voltage is compared to a standard reference voltage and any difference between these voltages is instantly sensed by a magnetic preamplifier. In turn, the magnetic preamplifier automatically adjusts the output delivered by the power magnetic amplifier so as to maintain constant the output voltage. A current limiter overrides the voltage control whenever the current approaches a preset safe limit and keeps the load current below this limit.

Battery charger efficiency is held between 70% and 75% from 25% to 125% of rated load. This high efficiency results from the use of hermetically sealed silicon power rectifiers, which have a low forward drop (as compared with selenium rectifiers), and the incorporation of a closed loop control circuit.

No periodic adjustments are needed for silicon rectifiers as compared to selenium rectifiers which age with use. Reduced size and weight of all components result from the use of these proven solid state rectifiers.

Lack of any moving or vibrating parts insures extended life and no operating noise.

COOK ELECTRIC Company

Since 1897

2700 SOUTHPORT AVENUE CHICAGO 14, ILLINOIS

(8) The immediate boss.
(9) Fellow workers.
(10) Vacation policy.
(11) Working hours.

Another survey, trying to find out why people leave their jobs, found personnel giving the following reasons for quitting:

(1) Lack of prestige.
(2) Insecurity.
(3) Slow promotions.
(4) Poor leadership.
(5) Not enough pay.
(6) Unsatisfactory working conditions.
(7) Unpleasant associates.

On the other side of the coin, Mr. Todd discussed what kind of employes business seeks in order to present a good corporate image.

A leadership potential is searched for by the Mountain States company through a school employment program which secures the services of young people with specialized skills and knowledge. This is necessary, Mr. Todd said, because:

"Certain characteristics of the telephone business make it particularly important that we obtain new people of outstanding ability and finest training. These include our constant search for improvements and economies in our services, the complexity and highly technical character of telephone equipment, the need to exercise good judgment in making large expenditures, and a variety of other operations.

"It is interesting to know that statistical studies of progress in the telephone companies show that the probability of above-average progress in the telephone business was definitely greater for the type of men and women who had stood high in their classes, than it was for those whose records had been average or below. . . .

"Our President, Mr. Koch, has said, 'Business today is seeking the clear mind, the open mind, the inquiring mind, rather than a completely trained new employe.'

". . . The qualities business seeks in new employes are more potential than real. They are capacities rather than skills. If an applicant has good intelligence and character, he has the prime prerequisites.

"Rarely is an applicant sought only for what he knows. It is his capacity for learning that is sought . . .

"(Qualities desired) include patience, a capacity for maintaining satisfactory human relations, rugged individuality, a sense of civic responsibility, a firm belief in America, and the ability of self expression."

Discussing the problem of keeping employes, especially college-trained employes, intellectually stimulated, Mr. Todd said a technique called "cross pollination" is used. Employes are given a diversified knowledge of the business by being transferred among various departments. A person who stays on one job too long without change is in danger of stagnation.

Mr. Todd also pointed out that the way to keep young people interested in the business was not only to teach them the fundamentals, but to give them authority and responsibility as fast as they can take it. Nothing is more discouraging to an ambitious young man, Mr. Todd remarked, than to have all his decisions made for him.

Classifications used by the Mountain States company to determine employes' general attitudes were mentioned by Mr. Todd. They are:

(1) Confidence in management.
(2) Pride in company.
(3) Job satisfaction.
(4) Personal satisfaction.
(5) Attitude toward supervision.
(6) The way general information about the company is passed on.
(7) The way information affecting the individual employe is passed on.
(8) Financial beliefs.
(9) Financial knowledge.
(10) Acceptance of service objectives.

Furthering the consideration of employe relations was the talk, "Pension Problems Facing Independent Telephone Companies" by Earl L. Maw of the Equitable Life Assurance Society of the United States.

Independent companies' public relations problems with regard to service were discussed by E. C. Weitzell, chief of the telephone operations and loans division of the Rural Electrification Administration.

He emphasized the need for improved management and the development of larger and more efficient operating units as well as the necessity for anticipating problems implicit in a rapidly increasing population and the growing demands for telephone service.

It is undesirable, he said, to have one company serving the town, and another the surrounding rural area. Consequently there is a need for exchanging and acquiring properties in many areas in order to permit a single company to provide telephone service in the most economical and efficient manner.

"Likewise the growing need for extended area service makes it desirable for all companies to recognize the necessity for providing this mutually beneficial service on a 50-50 basis. Extended area service is as valuable to the larger, urban areas as it is to the smaller, rural exchanges because an equal number of participants must be involved in telephone conversation from both ends of the EAS circuit. Therefore, it appears only appropriate that both share equally in the costs of providing such service."

Mr. Weitzell also pointed out that all Independent companies must be ready to accept their full responsibility for providing all types of communications services. He said this would include data transmission, telemetering, mobile service and an increasing amount of graded service instead of multi-party service in suburban and densely populated areas.

Data transmission, one of the services mentioned by Mr. Weitzell, was more fully discussed in a talk entitled "Machine-To-Machine Talk — A New Horizon," by Ray Ralston, data facilities engineer, the American Telephone & Telegraph Co.

First, Mr. Ralston described Dataphone as the transmission of data information over existing telephone circuits. By data, he said he meant the facts which originate in a variety of business machines. These facts may relate to inventories, billing, or records, anything that relates to business activities which require record keeping.

Why the need for the Dataphone? Mr. Ralston traced it to the needs of decentralized businesses to exchange information in large quantity at high speed. Along with this, there has been a tremendous growth in business activity.

This has led to the use of such machines as calculators, computers, punches and data processing machines in general. He said:

"The regular telephone message network is capable of handling a relatively high rate of speed . . . compared to teletypewriter arrangements. Where in the latter case we talk about speeds of 60, 75 or 100 words per minute—in a voice channel this may be as high as 800 words per minute.

"However, normally we phrase this in terms of 'bits per second.' As you may know, this *bit* is the smallest increment of information that can be transmitted. This bit of information is one of two conditions—either yes or no. Various combinations of 'yes—no' contain intelligence—800 words per minute corresponds to about 600 bits per second.

"The reason the message network can handle high speeds is because it has a wider bandwidth, that is, it can transmit a wider range of frequencies than a telegraph channel. It naturally goes without saying that the need to transmit great quantities is automatically satisfied if you can transmit it at a high enough rate of speed over a long enough period of time."

Advantages of the Dataphone he listed are:

(1) Availability.
(2) Economy—the subscriber

(Please turn to page 64)

Courts and Commissions

Ohio Independent Seeks $79,759 Annual Increase

The Bucyrus Telephone Co. on Oct. 8 petitioned the Ohio Public Utilities Commission for a $79,759 annual increase.

The company serves 6,504 subscribers through its Bucyrus, Chatfield and New Winchester exchanges. The increase, if granted, would increase the company's rate of return on investment from 4.28 per cent to 5.44 per cent.

The present and proposed rates for Bucyrus are as follows:

	Present	*Proposed*
One-party business	$9.00	$12.00
Two-party business	7.75	9.50
Rural business	7.25	9.00
One-party residence	5.00	6.50
Five-party residence	3.75	4.50
Rural residence	3.00	3.75

The company said that since its last raise in November 1953, 1,270 subscribers have been added to the company's lines. Also the number of employes has increased from 47 to 55 and taxes have increased from $45,395 to more than $110,000. The company also said that all its costs have risen.

Plastic Directory Cover Question Argued in Illinois

A Barrington, Ill. company that sells advertising for plastic covers it distributes free to telephone subscribers in 24 Illinois towns has accused Illinois Bell Telephone Co. of trying to restrain competition.

In oral argument before the full Illinois Commerce Commission, Murphy Reier, Inc., on Oct. 16 said that an Illinois Bell regulation, allowed by the commission in March, is unjust and unreasonable. It prohibits the use of covers that contain advertising on telephone directories.

Illinois Bell contended revenue derived from advertising in its yellow pages (classified advertising) helps to minimize the cost of service to subscribers and is necessary to the company's operations. In areas where Murphy Reier distributes plastic covers, bearing advertising solicited from local businesses, yellow-page revenue from these same businesses drops 12 to 21 per cent, Illinois Bell said. The plastic covers also were said to obscure essential telephone information on the front and back of directories, and in some instances contain wrong numbers. The commission took the case under advisement.

Wash. Company Seeks Raise; Installs DDD

The Kalama Telephone Exchange on Oct. 15 applied to the Washington Public Service Commission for increases scheduled to go into effect on Dec. 1.

Present and proposed rates are as follows:

	Present	*Proposed*
One-party business	$6.00	$6.75
Two-party business	5.25	6.00
One-party residence	4.75	5.25
Two-party residence	4.00	4.50
Four-party residence	3.50	3.75
Ten-party residence	3.50	3.75

R. M. Coffey, one of the owners of the exchange, said that the company has had only one rate increase in over 12 years, this being in 1954 when the company switched to automatic operation.

He said the cost of operating the system has risen 74 per cent since 1954 while operating revenue has only gone up 25 per cent. Also, the company has experienced, during the past four years, the most rapid growth in its 54-year history necessitating additional expenditures on equipment and wages. Direct distance dialing is also being installed.

Asks Stock Split OK in Ind.

The Sullivan Telephone Co., Inc. has asked the Indiana Public Service Commission for permission to split its 500 shares of common stock two-for-one and reduce par value from $100 to $50 a share, it was reported on Oct. 27.

Seeks Rate Relief in Wis.

The Wisconsin Public Service Commission on Nov. 7 was to have heard Central State Telephone Co.'s request for higher rates.

N.Y. Independent Gets Raise For Three Exchanges

The New York Public Service Commission on Oct. 29 granted a rate raise to the Dryden Telephone Corp. effective Nov. 1 (TELEPHONY, Nov. 1). In the aggregate, the new rates will produce an estimated $3,000 in additional annual revenue.

The company provides dial service to about 1,500 stations through exchanges in Dryden, Virgil and Etna. Extended area service is provided among the company's own exchanges. In addition, subscribers of the Etna exchange have toll-free service with the Ithaca exchange of the New York Telephone Co. and the Slaterville Springs exchange of the Caroline Farmers Telephone Co.; subscribers of the Virgil exchange have toll-free service to the Cortland and Homer exchanges of the New York Telephone Co.; and Dryden subscribers have EAS with Slaterville Springs.

In filing its new tariff, the company reported its operating expenses for the next 12 months will exceed those for 1957 by more than $5,000. It also said it is improving its plant.

Move To Stop AT&T Teletypewriter Raise

The Federal Communications Commission on Oct. 27 took under advisement a plea by customers of the American Telephone & Telegraph Co. to block an AT&T move to increase private line teletypewriter rates on a temporary basis (TELEPHONY, Oct. 25).

Petitions opposing the new AT&T proposal were filed by the American Newspaper Publishers Association, National Association of Broadcasters, United Press International, Chesapeake & Ohio Railroad, and the New York Central Railroad.

The FCC on Sept. 25 suspended proposed teletypewriter increases submitted by AT&T and Western Union until Jan. 1.

It acted after subscribers protested that the proposed increases were excessive and discriminatory.

AT&T countered on Oct. 16 by asking the FCC for permission to with-

draw its suspended rates and put into effect new and generally lower interim rates.

Southern Bell Appeals Rate Raise Denial in Louisiana

Southern Bell Telephone & Telegraph Co. on Oct. 27 took its appeal for a $14,242,000 rate increase in Louisiana to the courts (TELEPHONY, Oct. 25).

Declaring that the recent Louisiana Public Service Commission order denying a rate increase was "arbitrary, unreasonable and discriminatory" and a violation of the constitution, the company filed a petition with the 19th Judicial District Court of East Baton Rouge parish asking an immediate increase in rates.

Southern Bell's appeal was another step in its 14-months-long effort to obtain rate relief. On August 14, 1957, an application for an increase was filed before the commission. The application asked the commission to grant an immediate emergency increase of 7 million dollars and then hold hearings to determine just and reasonable rates for the future.

The commission refused to grant the emergency increase and ordered hearings which began Dec. 2, 1957, and extended through May 29, 1958.

On Oct. 10, an order was issued declaring that the company was entitled to an increase, but the increase was withheld on the grounds of what the commission charged was Southern Bell's failure to render adequate service.

In its appeal to the court, Southern Bell cited 28 errors in the commission's order. The petition asked the court for a $14,242,000 increase—the full amount sought by the company in its testimony before the commission—"or such lesser sum as the court should find the evidence justifies." In no event, the company's petition said, should the rate of return allowed be less than 6 per cent. The petition said an increase of $8,191,000 would be required if Southern Bell's rates were fixed on the same basis as other ultilities in Louisiana. An increase of less than 8 million dollars would be "clearly confiscatory," the company statement said.

The petition emphasized the following points made by the company in its testimony before the commission:

(1) That Southern Bell's Louisiana earning rate of 4.07 per cent for 1957 was the lowest of any Bell company in any state in the United States and far below the earnings of any major utility in Louisiana.

(2) That, in continuing this low earning rate, the commission is confiscating the company's property and denying the company the means of attracting the sums of investment funds essential to improvement and expansion of service in keeping with Louisiana's growth.

(3) That, as a minimum, Southern Bell is entitled to have earnings in Louisiana that compare with the earnings of other major utilities in the state.

The company referred to a commission decision of 1946 in the Louisiana Power & Light Co. case—later approved by the Louisiana Supreme Court—in which the reasonableness of rates was determined by the rate of return earned on property devoted to intrastate services.

The petition pointed out that, since 1946, utilities in Louisiana have been allowed to earn 6 per cent or more on their intrastate properties, but that the commission's recent order allowed Southern Bell only 4.07 per cent. This, the petition asserted, is "unjust and unreasonable" and in violation of the constitution.

The petition also pointed out that the company's position in the hearings before the commission was supported by 14 witnesses, several of whom are prominent in Louisiana business. In completely ignoring the overwhelming factual evidence presented by company witnesses, the commission "abused its discretion" to fix just and reasonable rates, the company's appeal declared.

The testimony of the commission's witness was heavily attacked. Declaring his method of calculation "replete with errors," the company's petition said his results were "unsound" and "unreasonable."

The petition declared that the commission's approach to the case was that of an "adverse party" and that "therefore, its order is not entitled to any presumption of validity." "The commission's approach was such as to make it impossible for its members to reach a decision from an impartial standpoint or in a judicial frame of mind," the petition stated.

Under such circumstances, the petition said, the company is entitled to an "independent judicial review of both the law and the facts."

Ohio Independent Gets Rate Raise Approval

The Glandorf Telephone Co. has been granted a rate increase effective Nov. 1 by the Ohio Public Utilities Commission.

The old and new gross rates are as follows:

	Old	*New*
One-party business	$4.25	$4.75
One-party residence	3.25	3.75
Ten-party residence	2.50	3.00
Multi-party rural residence	2.50	3.00

Two in Illinois Request Purchase Authorization

The Illinois Commerce Commission on Nov. 5 was to have heard the application of the Midland Telephone Co. to purchase the Sefton exchange of the Fayette County Mutual Telephone Co.

Also on Nov. 5, the commission was scheduled to hear the application of the Champaign County Telephone Co., Champaign, to purchase the capital stock of the Seymour Telephone Co. and to acquire its facilities.

N.C. Authorizes Stock Sale By Carolina T&T

Carolina Telephone & Telegraph Co., Tarboro, on Oct. 22 was authorized by the North Carolina Utilities Commission to sell 58,773 shares of its common stock at $125 per share (TELEPHONY, Nov. 1).

In granting permission for the sale of the stock, the commission directed the company to file a verified report of action taken and transactions consummated within 30 days following the sale.

The company, which serves 44 eastern North Carolina counties, said in its petition that it would apply the net returns from the sale of the stock to the retirement of short-term bank loans.

The par value of the stock has been set at $100 per share.

Set Up Subsidiary in Texas To Qualify for REA Loan

Announcement was made on Oct. 27 of the organization of Four States Telephone Co. as a wholly owned subsidiary of The Southwestern States Telephone Co., Brownwood, Tex.

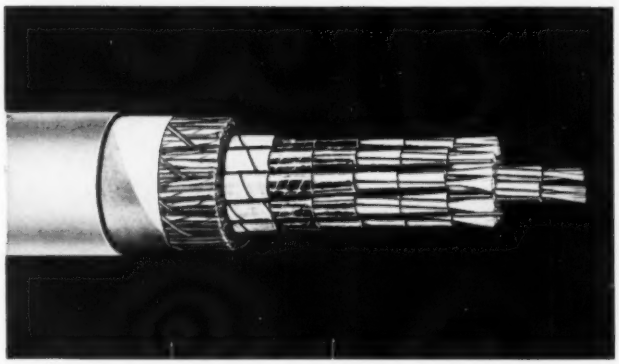
The new company will use funds from the Rural Electrification Administration for rural telephone development and expansion in sparsely populated areas, D. T. Strickland, vice president and general manager of the parent company, stated in announcing the formation of the new company. He estimated the new company will establish exchanges in 20 to 30 rural areas contiguous to Southwestern States property.

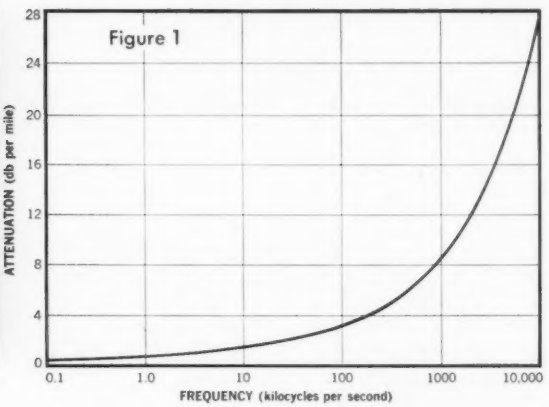
REA on Oct. 10 announced the approval of the first loan for Four States Telephone Co. in the amount of $635,000. These funds will be used for the development and expansion of rural telephone service in Concho, Kimble, Llano, Mason, McCulloch, Menard, and Schleicher counties in Texas. Similar projects are planned for areas contiguous to Southwestern States prop-

(Please turn to page 44)

GENERAL CABLE MANUFACTURES

VIDEO PAIR CABLE





VIDEO PAIRS are wide range, balanced transmission lines which are finding ever-increasing uses for high frequency applications. These specially designed pairs can be incorporated in cables containing either paper insulated or plastic insulated telephone pairs or incorporated within their own lead sheath or plastic jacket. Video pairs are in general use for remote TV pick-up points such as athletic fields and convention halls. These same pairs are also suited for a variety of other high frequency applications such as closed circuit TV, telephone carrier circuits and links to microwave stations. Cables containing video pairs are suitable for aerial or duct installation or can be armored for direct burial and submarine use.

The basic video pair consists of 2 conductors of #16 AWG solid annealed uncoated copper, insulated with foam polyethylene. These are paired with fiberglas-reinforced foam polyethylene fillers. Over this is applied a helically wrapped polyethylene tape, a parallel fold copper tape, and a helically applied copper tape. Video pairs that are used under lead sheaths will have creped kraft paper tapes applied over the copper shielding tapes and those under plastic jackets will have a polyethylene tape applied over the copper shielding tapes. When several video pairs are incorporated in a cable, the length of pairing lay will be varied and the pairs will be arranged in the cable to minimize magnetic coupling between pairs.

CONDUCTOR RESISTANCE: The conductor resistance shall not exceed 23 ohms per mile of cable (68°F).

MUTUAL CAPACITANCE: The mutual capacitance shall be not more than .058 microfarads nor less than .051 microfarads per mile.

CAPACITANCE UNBALANCE: The capacitance unbalance between conductors and shield shall not exceed 0.50 micromicrofarads per foot.

DIELECTRIC STRENGTH: Insulation shall be capable of withstanding a-c test potential for 2 seconds (maximum instantaneous) of 2800 Volts between conductors and between conductors and shield.

INTERNAL ECHO: The worst internal echo in a video pair shall be down at least 36 db from the measuring pulse.

CHARACTERISTIC IMPEDANCE: The characteristic impedance shall be 125.5 $\pm$ 3.5 ohms.

ATTENUATION: Figure 1 shows attenuation versus frequency on a typical cable.

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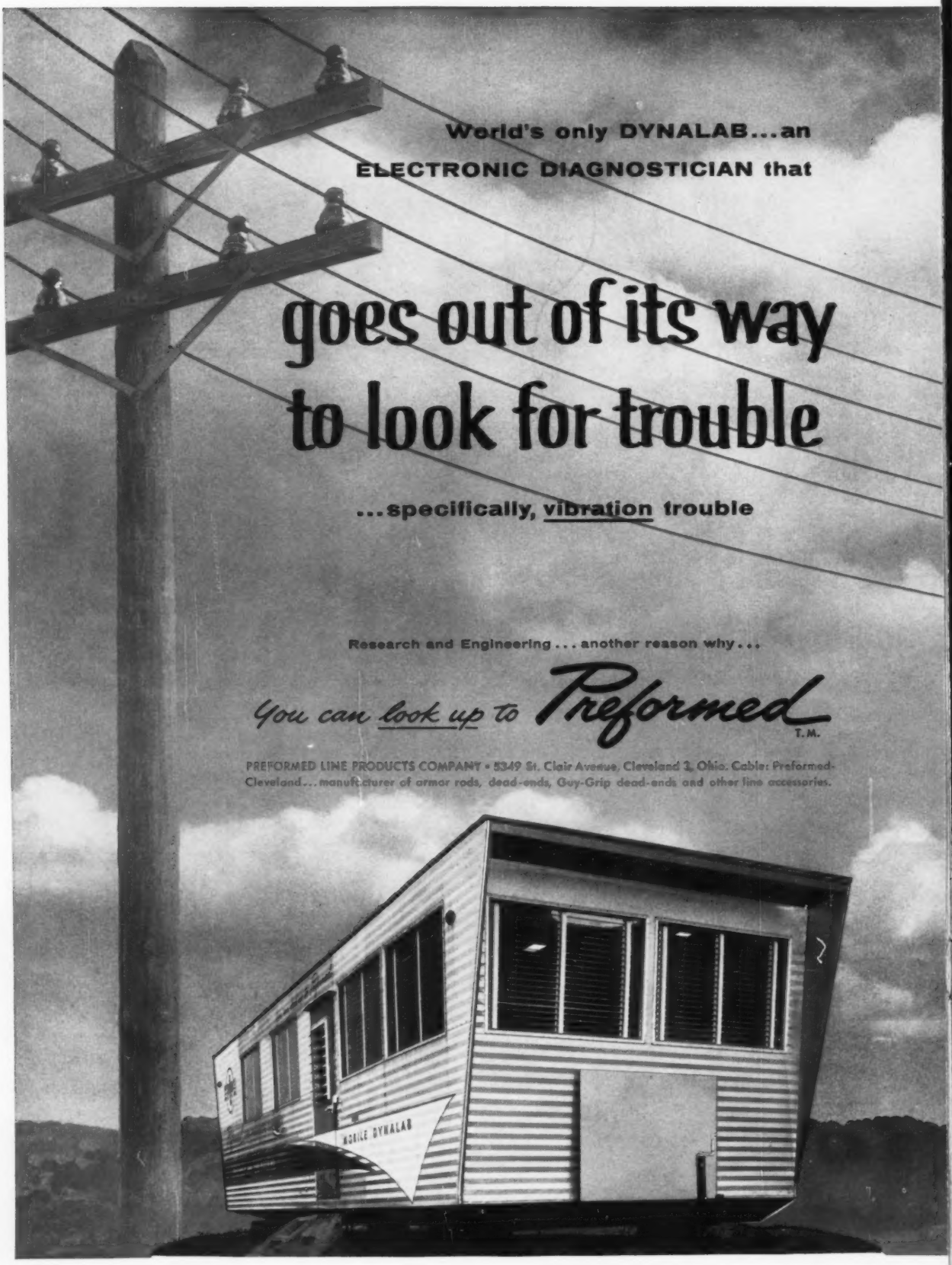
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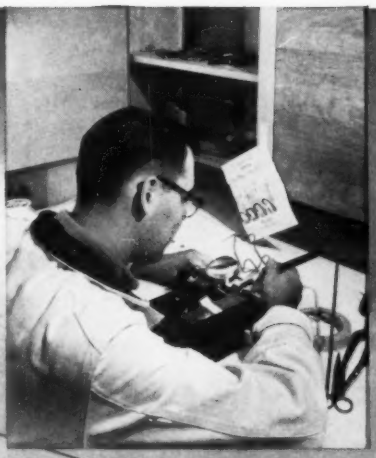

No. 3 of a series...

Vibration of overhead lines still represents a major problem to power and telephone utilities. Although significant improvements in hardware design and construction practices have been brought about through expanded research efforts, the incipient hazard of conductor failures due to fatigue and abrasive wear is becoming an increasingly important problem as investments in overhead construction continue to increase.

Laboratory vibration research has steadily progressed and has recently been accelerated by the expansion of vibration test facilities and refinement of instrumentation and testing techniques. Field measurement techniques, however, have not kept pace with laboratory advances. Therefore, relatively little quantitative data is available from field investigations for extension of laboratory studies. A few outdoor test spans and isolated field measurements have provided only sparse and often inconsistent results due largely to lack of coordination of these projects and inadequate instrumentation techniques.

The mobile vibration laboratory (Dynalab) recently completed by Preformed Research and Engineering was created by a select team of vibration engineers and electronics specialists to fulfill this need in the practical solution of line vibration problems. Operational requirements were painstakingly studied in cooperation with leading utility engineers. Radical design departures were necessary to overcome the unique problems of instrumenting and monitoring energized power and communication lines. A special trailer was designed to provide the high degree of mobility required to obtain data from a variety of geographical regions and remote locations throughout the country.

Already in field service, the Dynalab not only represents a significant scientific advancement in obtaining vitally important field vibration knowledge but also exemplifies the progress possible through an integrated utility-manufacturer team approach to such important and complex industry problems.

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Research and Engineering

Preformed Line Products Company

erty in Arkansas, Louisiana, and Oklahoma.

Mr. Strickland pointed out that the new company is not a "cooperative" but a 100 per cent subsidiary of The Southwestern States Telephone Co. Four States Telephone Co. is composed of physical telephone plant only, with the parent company providing the manpower and handling managerial functions. It is believed to be one of the first such corporate arrangements in the area involving a subsidiary communications company, serving rural areas only, using REA funds. There are no plans to change the privately-financed corporate structure of Southwestern States.

Plans for this first project of the new Four States Telephone Co. call for the purchase of two existing exchanges, converting them to automatic operation, and creation of a new automatic exchange. Some 1,100 subscribers in this seven-county Texas area will be served through these three exchanges.

The Southwestern States Telephone Co. operates 129,000 telephones in 162 exchanges in Arkansas, Louisiana, Oklahoma, and Texas.

OK Sale of Four Exchanges, Rate Raise in Kansas

The Kansas Corporation Commission on Oct. 22 authorized Rural Service Telephone Co. Inc., Lenora, to take over the Selden and Rexford exchanges of the United Telephone Co. of Kansas and the Zurich exchange of The Zurich Telephone Co. (TELEPHONY, Aug. 9). The company plans to convert them to automatic operation.

The Rural Telephone Service Co. was also allowed to increase and make permanent automatic rates at its Logan, Lenora, Morland, Damar, Edmond, and Palco exchanges (TELEPHONY, Oct. 11). The new rates will increase revenues $5,100 annually.

The commission acted on the increase after the company said its property taxes had been increased $17,000 at the affected exchanges.

In other Kansas actions, Golden Belt Telephone Association Inc., La Crosse, was authorized to take over the Bazine exchange of the Western Light & Telephone Co., Great Bend.

Ask Sale OK In Mich.

Charles E. Foote, manager of the Cambria Rural Telephone Co. announced that the Michigan Public Service Commission had set an Oct. 28 hearing date on the application of the Camden Rural Telephone Co. to purchase the Cambria company. The Cambria exchange serves 190 subscribers.

Illinois Companies Seek OK Of Sale-Purchase Option

The Windsor (Ill.) Mutual Telephone Co. and Northern Illinois Telephone Co. on Oct. 21 filed a joint petition with the Illinois Commerce Commission seeking approval of a "contract to sell and option to purchase." A hearing has been set for Jan. 22, 1959.

The petition reveals that the Windsor company has optioned its telephone property to the Northern Illinois company for a consideration of $5.00. The base purchase price is set at $48,150. The purchaser may exercise the option by sending written notice to the seller at any time within 12 months after the date of the option. The option also provides for successive renewals up to a total of 10 years from its date.

Stating that the "seller desires to sell and purchaser may desire to purchase certain telephone properties of the seller in the city of Windsor," the option provides that the base purchase price shall be subject to "appropriate adjustments."

The option binds the seller not to make any change in rates charged, or wages paid, before the closing date without the written consent of the purchaser.

The Northern Illinois company is not obligated to purchase unless all necessary permits and approval of public bodies are obtained. The purchaser's obligation is also subject to obtaining from the Rural Electrification Administration "an advance of funds to finance the purchase of the system or to finance improvements or extensions thereto." Either the seller or the purchaser may assign their interest in the option.

It is reported that a stockholders suit is pending in Shelby County, Illinois, to test the validity of a recent meeting of the Windsor company stockholders to authorize directors to sell the company's property. Minority stockholders claim to own more than one-third of the validly issued and outstanding shares of Windsor Mutual and contend that stockholders in favor of a sale to the Northern Illinois company have been unable to muster a vote of two-thirds of the stock required by law to authorize a sale.

Rule Southern Bell Cannot Spend Bonded Raise in Ala.

The Alabama Supreme Court on Oct. 30 reaffirmed its earlier decision which set aside a lower court rate increase order for Southern Bell Telephone & Telegraph Co. (TELEPHONY, Aug. 23).

The court made it clear that the rate structure remains unsettled and that the company cannot spend what it has already collected.

The increased monthly charges and long distance rates have been in effect since June 1954 with the understanding that if they failed to hold up on appeal to the higher courts, customers could get a refund.

Southern Bell was ordered to set the increased revenue aside in a separate fund which has now grown to nearly 27 million dollars. The increase amounts to 5 million dollars yearly.

After the Supreme Court on July 24, 1958 vacated the rate increase order approved by Montgomery Circuit Court Judge Walter B. Jones, Southern Bell contended the Supreme Court had in effect waived further jurisdiction and that the accumulated revenue was free to spend.

The Supreme Court had made no attempt to fix rates. It sent the case back to the Alabama Public Service Commission with instructions to approve a rate structure based on a "reasonable value" of Southern Bell properties in Alabama.

Until that is done and a rate schedule approved, the court said the increased revenue is still subject to a possible refund.

Lenkurt to Testify Before FCC on Reallocation

Lenkurt Electric Co.'s testimony in the forthcoming Federal Communications Commission 25-mc-to-890-mc hearings will show the needs of common carriers and other large users of communications for frequency allocations in the spectrum below 1000 mc.

The company, which has headquarters in San Carlos, Cal., said it will continue to press for reallocation of the 840-890 mc band to the common carrier fixed service.

Lenkurt also will present to the FCC a plan for a more efficient use of the present spectrum which it claims will result in lower-cost mobile communications within the very near future.

Its testimony, Lenkurt said, "will show how ordinary communications traffic engineering techniques can act as a 'spectrum stretcher' to provide truly low-cost, exchange-type service for all mobile users who want the advantage of their office or home telephone in their cars.

"A switching system based on proven telephone principles can be worked out which will make a number of trunks available to each mobile subscriber on a common user group basis, just as common equipment is now used in a

(Please turn to page 48)

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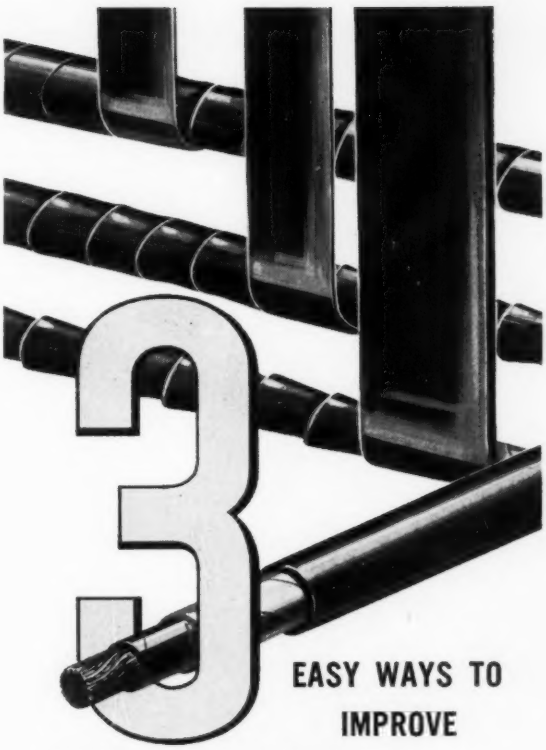

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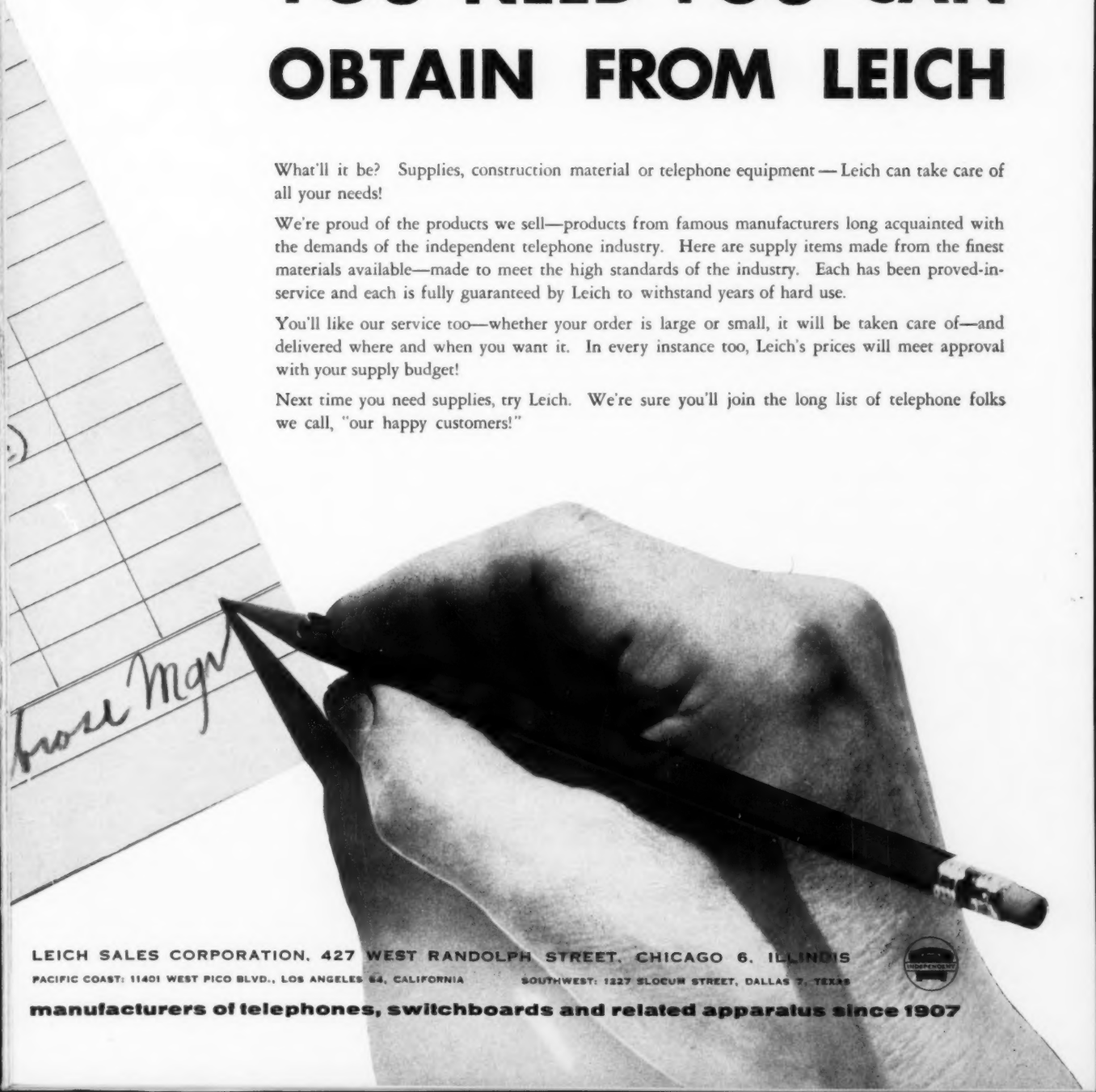

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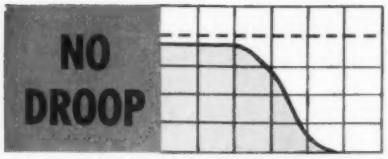

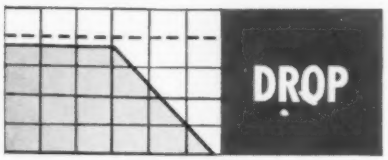

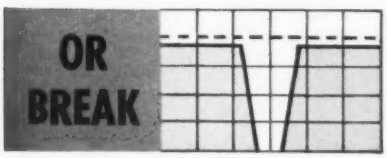

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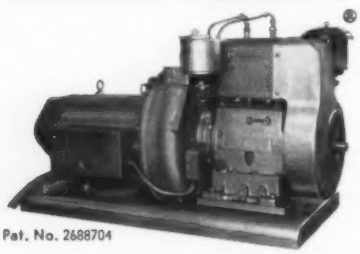

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telephone central office to provide single-party exchange service to large masses of subscribers."

Alan F. Culbertson, Lenkurt mobile telephone manager who will be witness for the company in the FCC hearings, said he will cover in detail the type of allocation picture necessary to make such mobile service available on a truly nationwide basis.

Okla. Rules Can't Legislate Number of Employes Needed

The Oklahoma legislature has no legal authority to require a telephone company to retain a minimum number of employes when it converts a telephone exchange to automatic operation, the state attorney general ruled on Oct. 22.

The opinion was given Sen. Robert H. Breeden, Cleveland, who asked whether such legislation would be valid. He said that some exchanges converted to dial service are being operated on an "unmanned" basis.

"Presumably, the operation of the dial service results in a monetary saving to the telephone company," the opinion said. "A requirement that the telephone company employ personnel not needed therefore would entail unnecessary expenditures by the telephone company which would amount to a pecuniary loss to the company."

The opinion said legislative requirement for employment of minimum personnel would be an arbitrary requirement and not a matter of necessity. "Hence, it is believed that the same would be invalid as being a taking of the telephone company's property without due process of law," the opinion added.

United of Carolinas Requests Bonds, Stock OK

United Telephone Co. of the Carolinas, Southern Pines, asked the North Carolina Utilities Commission on Oct. 30 for permission to issue and sell its first mortgage 5.25 per cent bonds in the aggregate principal amount of 1.2 million dollars and to issue for cash an additional 30,160 shares of its $25 par value common stock with a par amount of $754,000 in order to repay indebtedness incurred in carrying out an improvement program.

The company serves customers in North and South Carolina and operates 21,353 stations in the two states.

Ia. Company Announces Sale

The Farmers' Mutual Telephone Co., Montour, Ia., has been sold to the Central Iowa Telephone Co., Cedar Rapids, it was reported on Oct. 10.

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DIRECTOR DIAL SYSTEM

One problem long troubling users of point-to-point and mobile radio is achievement of telephone-like communication from a mixed group of radio links operating over a variety of frequency ranges. State police and public safety officials frequently face this problem. Their communication networks, formed from a number of VHF, UHF, microwave, and low frequency links, lack systematized interconnection.

Secode's new Director Dial System overcomes the problem by introducing five digit dial signaling and control. Adding the Secode Director Dial System to existing communication facilities results in an overall network formed from non-physical circuits which acts almost like a telephone system.

HOW IT WORKS

The total communication area is divided into sectors whose size fits the range of mobile units within the sector. Five digit Secode selective signaling is used to contact all fixed or mobile stations in home or alien sectors. For example, suppose car #352 in sector 2 wants to contact car #353 also in sector 2. Car #352 dials 22353. The first two digits, called "director digits," are used to select the sector, lock out calls outside the sector, and actuate the appropriate radio link. The final three numbers energize a signal in car #353.

Similarly, car #252 calling car #454 in sector 6 dials 66454. The first two digits select and control, the last three contact and activate car #454's signal gear. The signal light remains lighted until the call is answered.

ADVANTAGES OF SECODE DIRECTOR DIALING

Secode's new system gives private radio links maximum effectiveness. Only the circuits in use are "busy"—just like a telephone system. All calls are simply and accurately placed. It's just as easy to radio across the state as down the block. For practical purposes, the number of stations on one system is unlimited. The rugged new Secode Director Dial System is economical.

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TELEPHONY'S ELECTRONICS SECTION

BY HAROLD B. McKAY, ELECTRONICS EDITOR

ELECTRONICS AT USITA

SIX YEARS ago, the pre-convention issue of TELEPHONY listed 54 exhibitors at the USITA convention. This year, 92 were listed. A random check also shows that many of the new exhibitors are in the electronics business, which is some indication of the entrance the science of electronics has made into the telephone business.

In addition, the advertising pages of TELEPHONY tell a similar story. Companies which formerly sold only to the aircraft industry, or which made instruments for guided missiles are now in the telephone field.

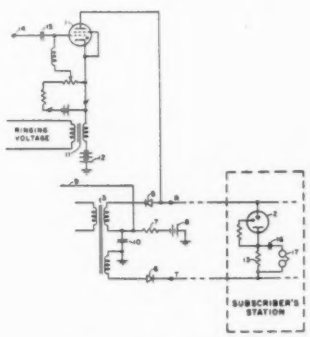
Electronics was not ballyhooed as such at the USITA convention, but electronic features in equipment were presented in a matter-of-fact manner.

ELECTRONIC RINGING

AN ELECTRONIC telephone exchange, if it is to be completely non-mechanical, must perform all functions with vacuum tubes, diodes, transistors, etc., instead of relays. Among the many things the system must do is provide a means of ringing a telephone bell and also for conveying switch-hook information and dial pulses from the subscriber station to the office.

One method of doing this is shown in Patent No. 2,827,519 issued to Frank A. Morris and assigned to General Dynamics Corp. (See accompanying drawing). This patent contemplates the use of a subscriber's set which employs a cold cathode vacuum tube 2 as well as the ringer 17 and the condenser 16. Current for the line comes from battery 8, through resistor 7, the transformer 3, diode 5, the ring side of the line through the handset (not shown), back through the tip side of the line, diode 6, through the transformer to ground.

During the off-hook condition, when current flows over this path, a voltage drop appears across resistor 7. This voltage is transmitted on lead 9, into the central office equipment as an indication of the off-hook condition.



Patent No. 2,827,519

During dial pulsing this voltage drop is interrupted, hence dial pulses travel over lead 9 into the equipment.

Ringing is applied to a line of this sort through transformer 11. Ringing battery 12, is rated at about 80 volts, which is the sustaining voltage of tube 1, plus tube 2. Ringing is started by applying a high frequency pulse to lead 14. This triggers tube 1, permitting it to conduct and ringing power then flows out on the ring conductor of the subscriber's line. Tube 1 is a thyratron type 2D21. Tube 2 is a cold cathode tube type 333A.

ELECTRONIC SWITCHING

ELECTRONIC switching systems have been under intense development for a number of years. Although development is far from complete, some of the new techniques are now coming out from under wraps. The *Bell Laboratories Record* for October describes an experimental electronic switching system. It introduces a whole new vocabulary to the telephone man. For example, the electronic switching system uses two memories. One of these is a temporary memory, which is the equivalent of the register relays found in mechanical systems. These would be the relays which temporarily store the number dialed by the customer as in sender circuits.

In the electronic system this becomes the "barrier-grid store," or BGS. It is a type of electrostatic storage tube. Its screen is considered to be divided into separate areas, or "spots", each of which either does or does not have an electrical charge. Thus, each spot records one bit of information, just as an operated relay would. Rows of spots on the storage tube record information on the status of each call as it progresses through the system.

A telephone exchange also requires a semi-permanent memory unit. In a mechanical office, this would be the block relay frame or other arrangements of cross-connecting wires, which associate a given telephone number with a given piece of central office equipment. It is a type of electrical memory or record system by which the switch location of a subscriber's number could be determined by tracing the jumper.

An electronic exchange needs this

also, because the equipment must be told where to direct a call. In the electronic system this is called the "flying-spot store", or FSS. Instead of being a network of cross connecting wires the electronic system uses a photographic plate. This plate contains an array of light and dark areas.

The information is read off of these plates by focusing a beam of light from the face of a cathode ray tube onto the plates through a system of lenses and thence to photomultipliers.

Thus, the electronic system obtains the cross-connect information it needs to complete a call merely by "looking" at the photographic plate which contains the record. When changes are necessary in the system, all that is required is to place new photographic plates rather than to rerun the jumpers.

Another new unit in an electronic exchange is the scanner. This is a matrix of semiconductor diodes which periodically, and at high speed, scans or looks at each telephone line to detect whether the user has begun to originate a call since the last look, or if a call was already in progress, or whether the call has been disconnected.

Coordination of the information from the scanner and the memories is accomplished by means of a central control, a circuit consisting of about 15,000 diodes and 1,500 transistors. This central control is actually a decision-making circuit. It brings together the information gathered from the two memories, the scanner and the switching network, and with this information decides the actions to be taken.

Connections in this experimental switching system are accomplished by means of gas-tube "crosspoints". This type of tube fires and closes the circuit when appropriate marking potentials are applied to its terminals.

In addition to the description given in the *Bell Laboratories Record*, a series of articles has started in the *Bell System Technical Journal*, which describes the electronic switching system in greater detail.

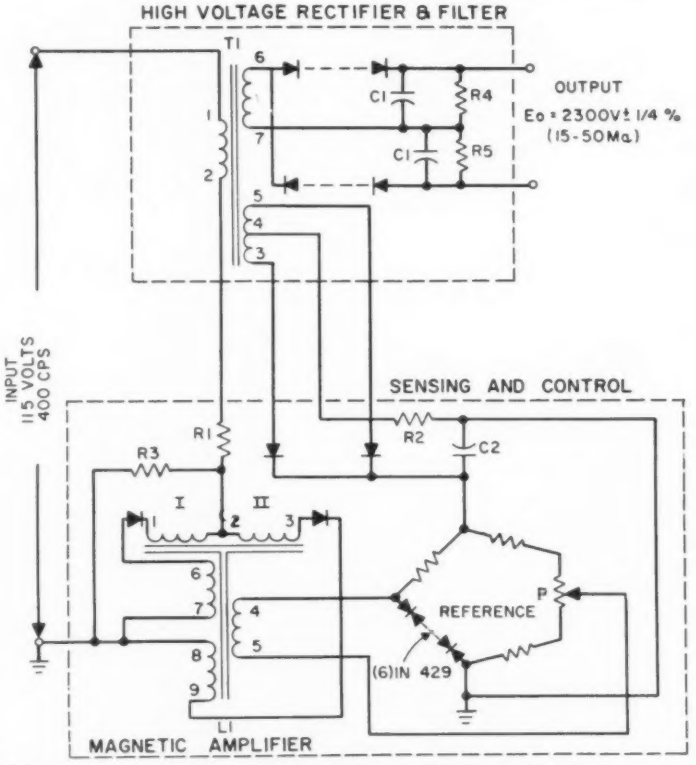
VOLTAGE REGULATOR

A VOLTAGE regulating device using a magnetic amplifier has been developed by the Bell Telephone Laboratories. The power supply is capable of delivering 2,300 volts at 15-50 milliamperes with ¼ per cent regulation. An outstanding feature of the design is the isolation of the control equipment from the high voltage output. This is possible because the control element which is a self-saturating magnetic amplifier, is connected on the low voltage input side of the power supply.

The high voltage rectifier is a conventional voltage doubler with sufficient capacitance to reduce the ripple to ½ of 1 per cent. The reference voltage is provided by a series chain of six 6-volt temperature compensated Zener diodes connected in a bridge circuit.

REA MANUAL

THE RURAL Electrification Administration recently issued some new sections for its Telephone Engineering and Construction Manual.



Schematic representation of 2,300-volt magnetically regulated power supply developed at Bell Telephone Laboratories.

This includes Section 444, which shows the method of calculation of net loss of negative impedance repeatered, loaded trunks. Charts similar to those used in the Bell System practice are included in this section and several actual examples are actually worked out. Other new sections issued recently cover the R1 and R2 transposition systems and a new application guide for the preparation of dial central office equipment requirements.

The REA manual is issued to REA borrowers and other interested people.

MOBILE RADIO

TELEPHONE companies are getting closer to the radio business all the time. A recent rule change by the Federal Communications Commission permits telephone companies to have mobile radio equipment on their own service trucks. Frequencies in the 450-megacycle region have been allotted to "telephone maintenance service." This might be particularly valuable to small companies whose service vehicles are few and far between.

Another new service set up by FCC is business radio. This service will allow almost any type of business enterprise to have mobile radio-telephones in their vehicles. Normally, this contemplates privately-owned operation, but telephone companies may become involved in leasing circuits to choice transmitter sites and will certainly become involved when the business radio users try to tie their system into the telephone lines.

Meanwhile progress on existing mobile radio systems proceeds apace. Secode has improved its system for providing direct dialing from an automobile into a city's telephone system. The equipment uses General Electric radio and Secode mechanical devices. It is arranged so that each vehicle automatically identifies itself at the beginning and end of each call, so that the wrong station will not be billed. A printing timer will keep track of incoming or outgoing calls or total air time.

A safety feature prevents a wrong station from answering a call if the driver of that station happens to take the receiver off while another station is being rung. This is something that even some party line telephones don't have. The central office equipment used in this system features separate relays for each mobile station, thus each vehicle can have a regular directory telephone number.

The air channel becomes a vast party line, which may have an unlimited number of stations, each with its own telephone number. The system will work with any kind of ringing on either a jack per station or a jack per line basis.

TRANSISTOR MANUAL

A NEW third edition of *Transistor Manual* has been published by General Electric Co. It contains information on transistor theory and construction techniques. A large number of circuit diagrams are given showing basic amplifiers, hi-fidelity equipment, radio circuits, and transistor switching hook-ups. It is followed by a section giving the specifications on a number of different types of transistors. You can get a copy of this book for $1.00 by writing to General Electric, Semiconductor Products Department, P. O. Box 1122, Syracuse, N. Y.

SLOW-SCAN TV

A SLOW scan television system which can be used by amateur radio operators has been developed by an engineer in the International Telephone & Telegraph Co. (IT&T) laboratory. The system which it is said can be built for about $200 would enable radio hams to see as well as talk to each other. The outfit will work over any radio or wire circuit which will handle voice communication. It could be adapted for use by police and newspaper men as well as radio amateurs.

OSCILLOSCOPE PATTERN

AT A RECENT IRE show the Du Mont Laboratories presented a trick display on a cathode ray oscilloscope which resembled a cone projected in three dimensions. A contest was conducted with a prize for the engineer who could show how the pattern was created.

This interesting experiment and how it was accomplished is described in Issue No. 6 of the *Du Mont Instrument Journal*. You can get a copy of this periodical by writing to the Technical Products Division, Allen B. Du Mont Laboratories, 760 Bloomfield Ave., Clifton, N. J.

COMPUTERS

THE FIRST electronic computers that were made were special purpose instruments. They were designed to handle certain problems only. However, as the art developed it was found that general purpose computers could be made which would perform a wide variety of functions and which could be applied to many different businesses.

So far, a few telephone companies have adapted these electronic brains into their way of life. They can be used anywhere that numbers, records, and a memory is required.

As the versatility of these machines has increased more effort has been directed to making them of a size which will fit in the average office. The Royal McBee Corp. of Port Chester, N. Y., now makes a unit which is smaller than an office desk. Designated the Royal Precision LGP-30, it is a single address,

fixed point, binary, stored program automatic electronic computer.

If you would like to learn more about how these things work, write to Royal McBee and they will send you an interesting bunch of reprints from different magazines, which describe the instrument and show its applications.

STEREOPHONIC SOUND

IF YOU are a hi-fi enthusiast and about to take the plunge into stereophonic sound, you may be interested in a possible simplification which may be made in these systems. Alan Sobel of the Polytechnic Institute of Brooklyn reports in the Proceedings of the IRE that the distance between man's ears has a lot to do with it.

The human listener cannot determine the direction of the source of sounds when the frequency is higher than about 1,000 cycles. The reason for this is that at lower frequencies the distance between the ears is less than a wave length. This results in a phase difference of the sound waves which are heard by the two ears and it is this which makes the direction of sound discernible.

At frequencies above 1,000 cycles, the phase difference changes with frequency and results in confusion. Therefore, according to Sobel there seems to be little point in reproducing the entire range of sounds in a stereophonic system. Only the lower frequencies would have to be given the binaural treatment.

TIPSY ELECTRONS

THE PROTON and the electron, reports *Scientific American Feature*, spin on their axes much as the earth does. Because they are charged particles, the spin generates a magnetic field; in other words, they are tiny magnets. When a spinning top is tipped from the vertical its upper end begins to circle or wobble. Similarly, the application of an outside magnetic field will cause a spinning proton or electron to wobble. Increasing the strength of the field merely increases the violence of the wobble, but does not cause the particle to flip over.

However the application of a second field at right angles to the first will cause the particles to tip.

All of this is giving scientists a new insight into many of the mysteries of physics over such a wide field as the structure of plastics, the chemistry of cancer, the location of metal deposits in the earth, and photosynthesis.

SPUTTERING CIRCUITS

PRINTED and etched circuits are the latest things in electronics, but the arts of printing and etching are not new. Now, another century old technique is being adopted to modern circuit construction. The technique is that of sputtering.

It now appears that entire circuits, including resistors, capacitors, and leads, may be made by this method, in which ionized gas molecules bombard a cathode, dislodging atoms of metal which then redeposit on nearby surfaces.

The Bell Laboratories have conducted experiments in which high melting point metals like tantalum and titanium have been laid down in films which show sufficiently high resistivity to be useful as resistors in printed circuits. The foundation material can be masked so that lines and patterns of any desired shape can be sputtered into place in films only a few hundred angstroms thick.

Printed capacitors can be made by a combination of sputtering and chemical methods. For instance, a tantalum film is first sputtered onto the foundation. This is oxidized to form a tantalum oxide dielectric film. Another electrode, a film of gold, can then be evaporated onto the dielectric to form the completed capacitor sandwich. No adhesives are required.

SILICON CARBIDE VARISTORS

SILICON carbide is a compound which changes its resistance as voltage is applied to it. It can be made up to have a very high resistance at a given voltage; however, if the voltage is raised the resistance will suddenly lower.

This feature has permitted this compound to be used as a lightning arrester or protector on high voltage lines and to a limited extent on telephone lines. Under normal conditions, the regulator voltage on the line will find the silicon carbide to be of very high resistance. If, however, lightning should strike, raising the line voltage, the silicon carbide will lower its resistance and shunt the lightning burst to ground.

A new application is that of spark suppression on step-by-step telephone equipment. A varistor made of this chemical can take the place of the capacitor-resistor network that has been used in the past. The regular telephone voltage will send little current through the high resistance varistor.

However, the induced high voltage which would otherwise cause a spark at contacts is quenched by the suddenly lowered resistance of the varistor.

NO BIG IDEA DUE

"THE PACE of fundamental advance in physics is set by human stupidity," in the opinion of Freeman J. Dyson, professor of mathematics at the Institute for Advanced Study at Princeton, N. J. In spite of the huge expenditures currently lavished on research no important innovation in physics is likely to appear in the next 25 years. Dr. Dyson, as quoted by *Scientic Ameri-*

can Features, declared that truly fundamental theories which lead to great advances in technology come at the rate of two or three per century at most.

Every great innovation in physics he said is merely the decisive moment in a gradual growth of understanding which extends over about 60 years. Thirty years commonly pass between the recognition of a puzzling phenomenon and the birth of the new idea that will explain it. Another 30 years pass between the birth of an idea and the working out of its major consequences.

RADIO SYSTEM REGISTRY

MOBILE radio systems are expanding at a very rapid rate, and even the smallest telephone companies are now finding themselves in the radio business. In addition, privately-owned miscellaneous common carrier systems are cropping up everywhere in the country. These systems provide two-way service to mobile units, but ordinarily do not connect to telephone lines. In addition, there are several one-way signaling or radio paging systems licensed for operation.

A directory of all these radio systems is available from the Communication Engineering Book Co., Monterey, Mass. It is called "Official Registry of Common Carrier Radio Systems," and costs $1.00. It lists all telephone companies, and miscellaneous common carriers which operate these systems and gives the frequency and number of units authorized. It also lists individuals who own equipment and which may communicate with telephone company stations; and also lists the paging systems and the studio to transmitter links used by broadcast companies.

PRINTED CIRCUIT REPAIRS

PRINTED or etched circuits consist of a plastic card containing a metallic circuit which is only about as thick as metal foil. To repair this foil is a tricky job and it is easy to damage it further while attempting to fix it. Several hints on how to repair these circuit boards are contained in the May and June issues of *Sylvania News*.

You can get this publication free by writing to Sylvania Electric Products, Inc., 1100 Main St., Buffalo 9, N. Y.

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Almost everyone admits that the rapid growth of electronics has created problems for telephone men. The skills of yesterday are still important, but they must be augmented with a new skill . . . electronics.

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Concluded from page 20

One of the things to bear in mind about these House committee investigations is that the U. S. Supreme Court seems disposed to follow them up in any subsequent litigation reaching the highest court. On Oct. 27, by a vote of 7 to 2, the U. S. Supreme Court sent back to the lower court (for review) another FCC grant of a television license—this one in Orlando, Fla. The Orlando case also involved allegations that a former member of the FCC, Richard A. Mack, listened privately to only one side of a case for a Channel 9 television permit at Orlando. Thereafter a majority of the FCC granted a permit to one of two rival applicants overruling a contrary recommendation of its own hearing examiner.

The odd part about this case was that the U. S. circuit court of appeals for the District of Columbia affirmed the FCC's majority, notwithstanding the charges of irregularity in hearing procedure which had been aired before the House Subcommittee on Legislative Oversight. Now the U. S. Supreme Court has set aside the lower court's decision and sent the case back "for such action as it may deem appropriate." There may be other court reviews of FCC activity following up the House subcommittee's revelations.

Telephone Recession Over?

A branch of the United States Department of Commerce — namely, the Business & Defense Services Administration (BDSA)—says the recession is definitely over for the telephone industry. It has noted such a general improvement in business conditions throughout the country that the communications industry has had to revise upward its estimates for 1958 operations. The BDSA reports that a continuation of this trend will also mean that plans for 1959 must be reshaped by both the Bell System and many Independent telephone companies.

Basing predictions on field sampling and other indicators, BDSA's communications industries division said it is expected now that approximately 7.3 million telephones will be produced this year as against the less-than-6-million forecast by the division earlier. Bell and the Independent segments of the operating industry are expected to share in this improvement along with the communications equipment manufacturers.

Teletypewriter Rates Cut

It was reported in this department last week that the American Telephone & Telegraph Co. and Western Union had voluntarily requested the FCC to reduce its proposed rate increases for private line telephone service from 26 per cent to 22 per cent. This followed numerous protests by major users after which the FCC had suspended the originally proposed increase. Now the FCC has followed up (in a letter to the AT&T) by granting permission to the Bell System to reduce its filed increases on two conditions.

The FCC says that it will allow the revision of the rate boost (1) if there is a reduction of $1.00 on the proposed charges for service between the consumer's location and the company's local servicing office and (2) if the proposed increases will remain at the lowest level of either the original or revised tariffs with respect to charges for the use of equipment. On the latter point the revised schedules would have boosted, in a few circumstances, certain charges as compared with increases originally asked. On Oct. 31, Bell agreed to both conditions and filed accordingly.

The FCC emphasized, in agreeing to the revision of the rate increases, that such action is not the same as FCC approval on the merits of the proposed revision. In other words, under the Communications Act it could allow the new rates to go into effect while at the same time investigating and eventually ordering changes in specific charges.

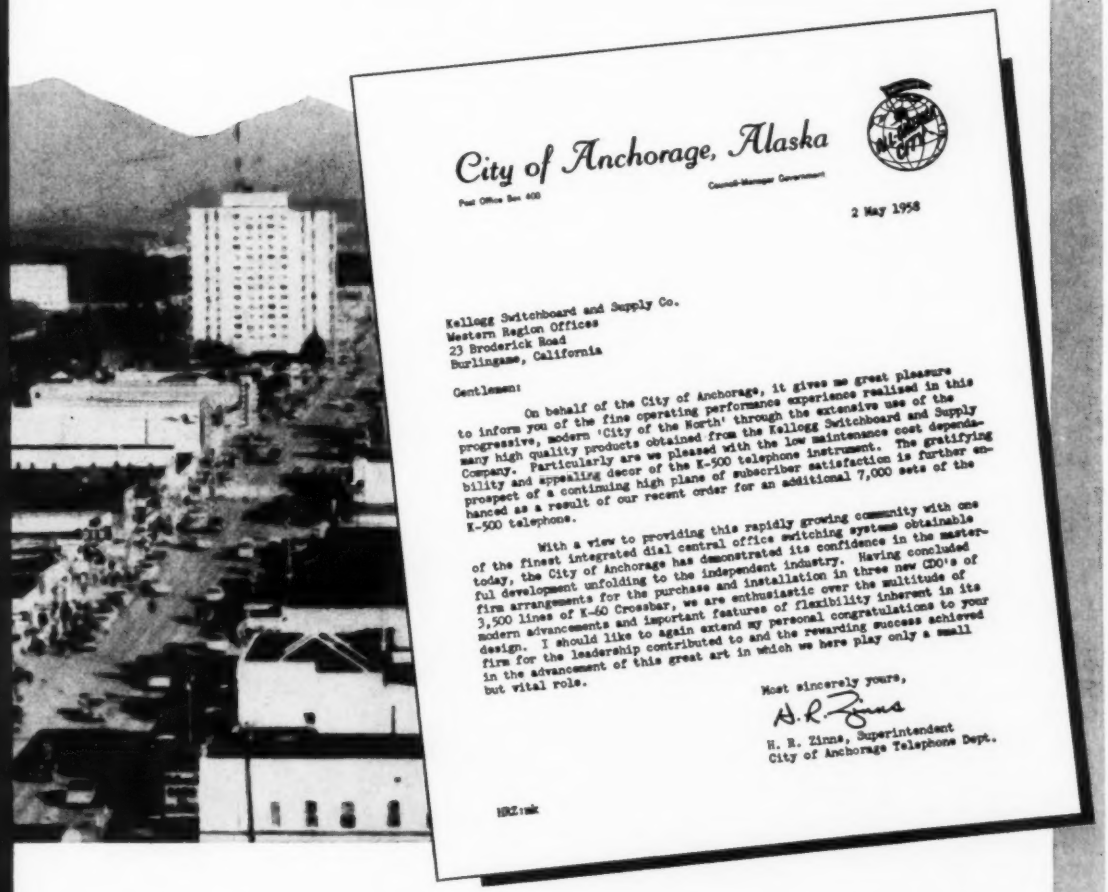
FCC told the company it could file revised rates to be effective 30 days after filing. This is the normal lag. As modified, the increase is calculated to yield AT&T additional revenues of about 8.4 million dollars compared with 11 million dollars which would have been produced under the originally proposed rate increase.

General of SW to Sell Three Texas Exchanges

The General Telephone Co. of the Southwest and the Guadalupe (Tex.) Telephone Cooperative recently jointly announced the plans of the Guadalupe Co-op to purchase General's Leesville, Kingsbury, and Westhoff exchanges as well as rural lines in the vicinity of the General company's Gonzales exchange.

It is also planned that extended area service will be provided between General's Gonzales exchange and Guadalupe's Cost exchange and also between Gonzales and the co-op's Saturn exchange.

Kellogg's "Fine Performance" Aids Alaska's Growth to Statehood



City of Anchorage, Alaska

Council-Manager Government

Post Office Box 400

2 May 1958

Kellogg Switchboard and Supply Co.
Western Region Offices
23 Broderick Road
Burlingame, California

Gentlemen:

On behalf of the City of Anchorage, it gives me great pleasure to inform you of the fine operating performance experience realized in this progressive, modern 'City of the North' through the extensive use of the many high quality products obtained from the Kellogg Switchboard and Supply Company. Particularly are we pleased with the low maintenance cost dependability and appealing decor of the K-500 telephone instrument. The gratifying prospect of a continuing high plane of subscriber satisfaction is further enhanced as a result of our recent order for an additional 7,000 sets of the K-500 telephone.

With a view to providing this rapidly growing community with one of the finest integrated dial central office switching systems obtainable today, the City of Anchorage has demonstrated its confidence in the masterful development unfolding to the independent industry. Having concluded firm arrangements for the purchase and installation in three new CDO's of 3,500 lines of K-60 Crossbar, we are enthusiastic over the multitude of modern advancements and important features of flexibility inherent in its design. I should like to again extend my personal congratulations to your firm for the leadership contributed to and the rewarding success achieved in the advancement of this great art in which we here play only a small but vital role.

Most sincerely yours,

A. R. Zinns

H. R. Zinns, Superintendent
City of Anchorage Telephone Dept.

HRZ:mk

The reliability and "fine operating performance" of Kellogg products have helped Anchorage and other cities of our most northern state keep pace with the demands of modern communication needs. This glowing report from Alaska's largest city is typical of the service record and achievements chalked up by Kellogg in more than 60 years of association with the independent telephone industry.

We are proud to be serving independent telephony so successfully, and particularly proud in this instance to have aided the growth of our 49th state.

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Communications Division of International Telephone and Telegraph Corporation.

KELLOGG
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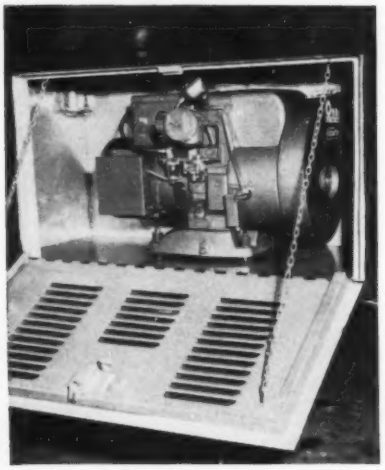
ELECTRIC PLANT
NEWS



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Before the dual-purpose Onan Electric Plant was installed on this maintenance truck, it was necessary to run the 160 H.P. truck engine to charge batteries for communications. Now, the 2 H.P. Onan Electric Plant does the same job . . . saving fuel and engine maintenance.

These battery charging-A.C. combination electric plants are available with 1,000 or 2,000 watts of A.C. output for operating tools and lights. Either size also delivers a full 30 amperes . . . enough to handle battery drain from radio and lighting.

Big savings reported!

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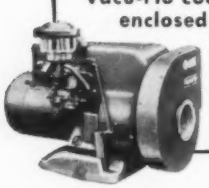
Vacu-Flo cooling permits enclosed installations



Vacu-Flo cooling is a low-cost optional feature on Onan air-cooled plants up to 10,000 watts.

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USITA COMMITTEE

Continued from page 24

Included on the agenda for discussion were the following subjects:

(1) Policy on the future use of recorded announcements.

(2) Elimination of toll trains and means for handling delayed or collect coin box calls.

(3) The status of "in-band" signalling for coin control with prepay paystations.

(4) Scheduling of the discontinuance of flash busy signals.

(5) Free calling from coin box and metered telephones to official telephone company numbers.

(6) Mark sensing of manually handled toll tickets.

(7) Degree and kind of translation available to Independents through Bell common control offices.

(8) Release of DDD traffic onto trunk groups.

(9) Recall signals.

(10) Transmission performance.

(11) Pulsing and switching requirements and tests.

(12) Toll testing facilities.

We consider these joint meetings as a valuable contribution to the success of DDD and believe the Industry will profit by a periodic exchange of views.

DDD is in the process of evolution and new developments which will affect the quality and economy of the service will continue to present technical problems of mutual interest.

For optimum results, it is necessary to coordinate the procedures and technical aspects of this important facet of telephony.—L. L. Ruggles, Chairman; Harry Barrows; M. L. Donaldson; C. M. Davis and Herman Kleinhammer.

(4) Engineering Education

The primary concern of this subcommittee during the association year has been the second annual Engineering Management Conference at Michigan State University. The 1958 conference was held during the period June 29-July 26. A total of 35 participants, representing 27 companies, completed the conference course.

The basic curriculum established for the first conference in 1957 was repeated substantially intact in 1958. . . .

From observations of the instructional staff and other interested parties, together with the information obtained from survey questionnaires completed by conference participants, we have a number of objective criticisms of the conference. All concede that the conference in its present form is a worthwhile venture. Practically all add that they have one or more suggestions for improving the course.

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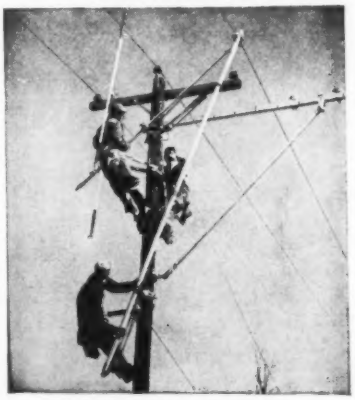

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This is not disturbing when it is considered that the conference has just completed its second year of operation. Additionally, it is recognized that in attempting to meet the needs of a number of individual operating companies, both Independent and Bell, together with manufacturers and suppliers of somewhat divergent interests, it is certain that honest differences of opinion will be encountered.

The primary shortcoming of the 1957 conference can be traced to the lack of attention to administrative details. While this situation was largely corrected in the 1958 conference, work remains to be done. A conference coordinator from the Electrical Engineering Department of Michigan State University served throughout the most recent conference. It was obvious that administrative details and class schedules were much less of a problem this year than they were in the 1957 conference.

The 1957 conference attempted a correlation of all the basic courses by introducing broad-scope problems during the final week. It developed that this technique was found to be generally unpopular with instructors and students alike. Hence, review problems were confined to individual courses at the 1958 conference. This procedure was much more readily accepted.

There has been evidence that the four-week period is sufficiently long as to restrict registrations from many operating companies. Several evaluators have indicated the desirability of streamlining the conference so that engineering techniques are accentuated and economic considerations allocated less instructional time. This and related suggestions will be explored by the sub-committee . . . .

There have been indications that the class participants should be carefully screened prior to registration in order that a more uniform class level can be maintained. Because of limited advance registrations for both conferences, all who applied were accepted. Obviously, such procedures permit significant deviations in class educational background, experience and ability to assimilate new ideas. This deviation tends to hold the presentation of ideas and material to the level of the slowest man and thereby impedes rapid coverage.

It is anticipated that screening processes will be utilized at future conferences whether or not the enrollment quota is completely subscribed. In a further effort to improve the general receptiveness of the group, advance instructional materials and data will be distributed to participants prior to the actual conference.

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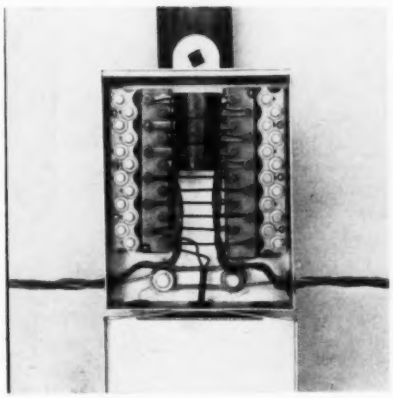

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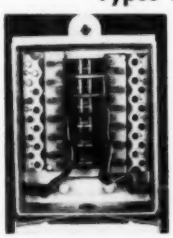
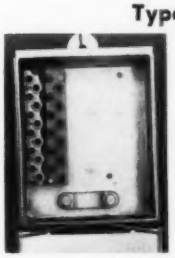


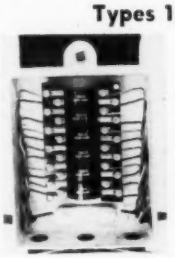
Contains two protected terminal strips complete with type 637A(88MH) or 637 B (44MH) coils.

Type 177F



Contains one protected terminal strip —no coils.

Types 177C-177D



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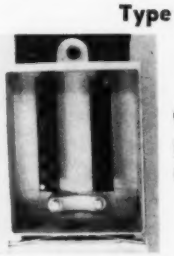

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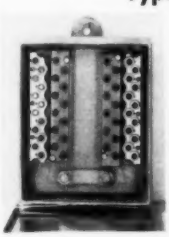
Types 177E



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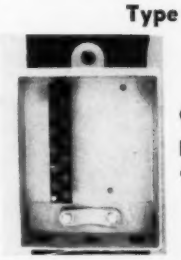

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The telephone industry has accorded general acceptance to the Engineering Management Conference. As the objectives and accomplishments of the conference become better known, it is probable that interest and enrollment will grow accordingly. While small study and lecture groups will be maintained, it is vital that enrollment increase if the best instructional talent available is to be retained.

In order to interest more operating companies, a complete review of the present curriculum is now under way. Every effort will be made to streamline the course and to add emphasis to operating engineering subject areas. With two sessions already under our belt, we know many of our mistakes. It now remains to correct these mistakes without making more. If such remedial action can promptly and properly be applied, the telephone engineering conference could well be destined for a long run in Lansing.

One other significant matter acted upon by the sub-committee was the review of the Georgia Tech Telephone Technology Course. This program, designed for training and developing telephone technicians, received the wholehearted endorsement of this subcommittee. It was recommended through member letters that member companies and state associations actively encourage participation in the program.—P. H. Henson, Chairman; R. J. Loveland, and F. E. Norris.

(5) Transmission and Protection

The activities of this committee since its inception last fall have been concerned mainly with developing a plan for familiarizing all Independent companies with the necessity for improved transmission and securing their cooperation in providing the necessary improvements. The committee felt that there is adequate information available on this subject, but there is a need for some central means of coordination between Independents and between Independents and the Bell companies.

Information obtained by the committee led them to the conclusion that this problem could be solved with the cooperation of the state associations and associated Bell companies. The committee decided to recommend that each state association be requested to appoint or assign a committee to this task to work with a similar group from the Bell company within its state.

The state association committees would also have liaison with the USITA Sub-committee on Transmission and Protection for the purpose of requesting assistance on problems which could not be resolved at the state level. The subcommittee would maintain liaison with AT&T with the hope that through cooperation at this level acceptable solutions to the problems could be found.

The plan was reviewed with the chairman of the Direct Distance Dialing Sub-committee for possible duplication of effort. He did not feel it would duplicate or conflict with the work of his committee.

The plan was also discussed with representatives of AT&T. These representatives approved the proposal and pledged the cooperation of associated Bell companies.

Pending approval of the USITA board of directors and before this program was inaugurated nationally, it was deemed advisable that a trial of this program be made in South Carolina. AT&T was in agreement with this suggestion and determined that it would be agreeable to the Southern Bell Telephone & Telegraph Co.

The Southern Bell has assigned the personnel who will work with this committee. The South Carolina Independent Telephone Association also was interested in this program and the job has been assigned to its Toll Coordinating Committee. Work has already been started to get the plan under way.

As the details are worked out in South Carolina, this information will be used to draw up a proposed plan for a pilot state program. Upon completion of the plan and approval of USITA, the plan will be sent to each state association with the request that they organize such a program.

Consideration is also being given to the preparation of a set of notes on transmission to be prepared jointly with AT&T. The notes would be published and made available to these committees for their guidance.—Frank S. Barnes Jr., Chairman; P. K. Fugate; R. E. Lawrence, and M. S. Royalty.

(6) New Techniques and Developments

This sub-committee, in its initial year of operation, has considered several methods of meeting its responsibility to member companies. It has now been concluded that major and significant techniques and developments should receive the attention and study of the sub-committee as opposed to minor advances or contributions in the way of improved tools, testing equipment, plant materials and component parts.

Toward this end, the sub-committee is presently evaluating the possibilities of undertaking an exhaustive study on the economic and engineering aspects of electronic switching. If this subject area is selected for study, a detailed

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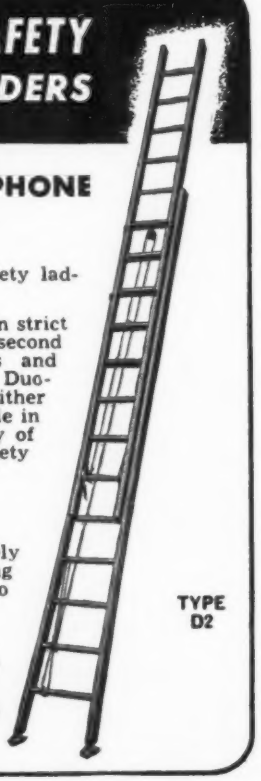

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study and evaluation will be prepared for distribution to member companies. —Ray Blain, Chairman; Gordon Orelli, and George Shoemaker.

From the above reports, it can be seen that the 1957-1958 association year has been a busy one for all serving on the Engineering Committee. . . .

It has been an honor and a pleasure to serve the association during the past year. The assistance and cooperation of all concerned is gratefully acknowledged.—P. H. Henson, Chairman; R. J. Loveland; W. T. Pitbladdo; F. D. Reese, and A. A. Wilson.

REA AUTHORIZES LOANS

Continued from page 26

James L. Capel is president of the Champaign County Telephone Co. and Max G. Hoagland is manager.

•

South Missouri Telephone Co., Steelville; $337,000; Oct. 17.

Loan funds will enable the borrower to furnish initial service to 300 rural families and to improve service for 342 existing subscribers. As a nucleus for the new service, the borrower proposes to acquire, rehabilitate, and expand the facilities of the Inland Telephone Co. at Caledonia. Inland now provides magneto service to the existing subscribers through exchanges at Belleview, Caledonia, and Irondale.

The borrower plans to convert these exchanges to automatic operation and to create a new exchange at Belgrade, now a part of the Caledonia area. Sites will be purchased and new automatic offices constructed at each location. The borrower plans to continue renting headquarters facilities in Steelville.

REA loans to this borrower, totaling $655,000, will make possible new and improved telephone service for 1,456 rural subscribers. The completed system will consist of nine exchanges.

James D. Worley is both president and manager of the South Missouri Telephone Co.

•

Dakota Cooperative Telephone Co., Irene, S. D.; $116,000; Oct. 17.

These funds will be used by the borrower primarily to complete its authorized system. Provision is also made in the loan to acquire facilities of the Grant Township community. These additional subscribers will be served from the borrower's Worthing exchange.

REA loans to this borrower total $1,930,000. With these funds, it will be able to offer new and improved service to 3,553 rural subscribers. The 12

(Please turn to page 62)

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Use this fast portable trencher for cable, pipe, tubing, conduit

POW-R-SPADE narrow trenches cost 1c to 5c per foot including labor.

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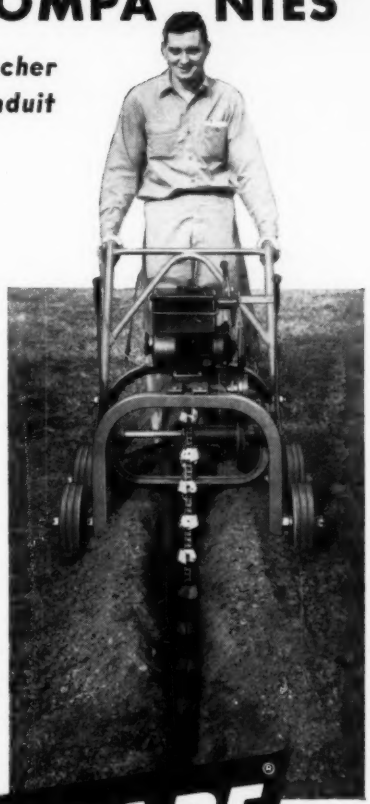

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A rugged machine. Easy to set and to operate. Oil-sealed bearings. Powered by a well-known engine. Minimum maintenance. Shipped completely assembled, ready to go to work for you. Additional interesting details and information immediately yours upon return of the coupon.

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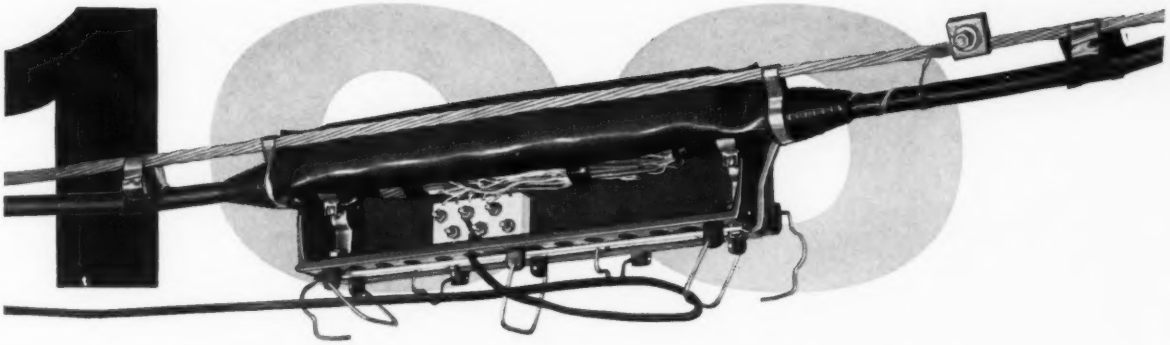
This 49th USITA National ad to appear in TIME, November 10; U.S. News & World Report, November 28



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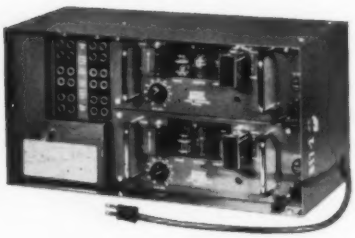

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providing in one frame: Two amplifiers that can be used together or independently. Two line equalizers, adjustable without strapping. Two jack fields—for easier testing, equalizing, monitoring. Self-contained power supply.

Portable or rack-mounted, this easy-to-install, time and money-saving unit replaces up to 10 separate pieces of equipment. The new S-17B provides broadcast quality wide range program channels for radio, FM, TV and wired music. Plug-in amplifiers are easy to inspect, repair or replace.

Thoroughly field tested—60 were used to broadcast the Pasadena Rose Parade and the Rose Bowl Game.

Weight: 44 pounds.

Output Power: +24 dbm.

Distortion: not over ½% THD (30-15,000 CPS at +24 dbm).

Gain: at least 44 db; adjustable to minimum of 8 db.

Equiv. input noise: —115 dbm.

Input impedance (internal): 150/600 ohms ±5%, 30 to 15,000 cps.

Output impedance (internal): 150/600 ohms ±5%, 30 to 15,000 cps.

Longitudinal balance of input circuit and output circuit with 600 ohm connection:
55 to 60 db at 40 and 15,000 CPS
70 db at 1000 CPS

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exchanges of the system are already in operation serving approximately 2,937 subscribers.

B. Maynard Christenson is president of the Dakota Co-op and Kenneth Knudson is manager.

•

Reservation Mutual Aid Telephone Corp., Parshall, N. D.; $175,000; Oct. 21.

These funds will enable the borrower to improve service to 148 rural families. In order to furnish this new service, the cooperative expects to enlarge its operating area. The 90 subscribers who will receive improved service are now served by the magneto system of the Douglas Cooperative Telephone Co. The borrower proposes to acquire, rehabilitate, and integrate these facilities.

A new automatic central office is scheduled at Douglas, from which the borrower will furnish initial service to 58 rural families in its service area.

A portion of this loan will be used to complete the authorized system. REA loans to this borrower, which now total $2,653,000, will make possible new and improved service for 3,073 subscribers. The completed system will consist of 13 exchanges. Ten of them are now in operation providing dial service to approximately 2,150 rural subscribers.

Donnell Haugen is the president and Fred W. Ahlgren manages the Reservation Mutual Aid Telephone Corp.

•

BEK Telephone Mutual Aid Corp., Steele, N. D.; $754,000; Oct. 23.

This loan will allow the BEK company to improve service for 267 subscribers and to extend initial service to 636 rural families. Of the present subscribers, 143 receive dial service from the Strasburg exchange, now owned and operated by the Northwestern Bell Telephone Co. The remaining 124 subscribers are served by the Westfield magneto exchange which the borrower has recently acquired with its general funds. The BEK cooperative proposes to acquire the Strasburg exchange.

The borrower plans to build a new automatic central office at Strasburg. This exchange, together with the cooperative's present Hazelton exchange, will serve both the Strasburg and Westfield areas. About 108 of the subscribers provided for in the loan will be switched through the Linton exchange of the Northwestern Bell Telephone Co.

REA loans to the BEK cooperative, totaling $2,737,000, will make possible new and improved service to 3,488 subscribers. The system will consist of 10 exchanges of which nine are in operation furnishing dial service to approximately 1,800 rural subscribers.

George L. Jackson is president and Victor O. Sorsdahl is manager of the BEK company.

•

Continental (O.) Telephone Co.; $580,000; Oct. 23.

This new borrower proposes to improve service for 1,203 subscribers and to furnish initial service to 364 rural families. Of the present subscribers, 758 receive common battery and magneto service from the borrower and 445 get magneto service from the Country Home Telephone Co. at Grover Hill which the borrower proposes to acquire, improve and expand.

New construction planned by the borrower includes a combined headquarters and automatic office building in Continental, and an automatic central office at Grover Hill. The existing building in Miller City will be remodeled and new automatic facilities installed. A portion of the loan will be used to refinance the borrower's existing indebtedness incurred by improving its present system.

Paul H. Kaufman is president and Robert P. Kaufman is manager of the Continental Telephone Co.

•

Chequamegon Telephone Cooperative, Cable, Wis.; $103,000; Oct. 24.

The borrower plans to use these funds to: (1) Complete the previously authorized system; (2) build new headquarters facilities in Cable; and (3) improve service for 30 subscribers recently added to the system. The 30 families are now served by the Mason Rural Telephone Co. and are switched by the borrower through its Mason exchange. The Mason company plans to abandon its lines upon provision of regular subscriber service from the borrower.

REA loans totaling $967,000 have been approved to the Chequamegon cooperative which will enable it to furnish new and improved service to 1,210 rural subscribers. The 10 automatic exchanges of the system are all in operation serving approximately 990 subscribers.

Jacob Maciosek is president and Stephen J. Barry is manager of the Chequamegon co-op.

To Tip the Scales

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INSTRUMENT KITS

Continued from page 27

men or others who are handling large quantities of power. The telephone man is more interested in the range between —6 and about +6 db. On the Model V-70 this range falls within about a half inch of scale space, which means one would have to interpolate to get a reading between 0 and —6 db.

It should be remembered, however, that better readings below 0 db cannot be obtained unless the instrument has some amplification built into it, and instruments which do have these amplifiers often do not have the other features that this instrument does have.

For example, as a dc electronic volt ohmmeter this instrument can be used to measure the grid bias on vacuum tubes without disturbing the circuit. This is extremely valuable to those who are attempting to locate electronic trouble by the voltage measurement method. Many vacuum tube voltmeters used to measure —30 db at carrier frequencies are totally incapable of measuring 1-volt dc grid bias. As mentioned at the beginning of this article, vacuum tube voltmeters come in a great many varieties and in choosing one, the use to which it is to be put should be kept in mind.

Advantages

The Paco Model V-70 is a low cost instrument which can be used to measure ac or dc voltages in an electronic circuit with a minimum of interference to the circuit while it is doing so. It will measure voltages without the meter itself causing an unwanted voltage drop and it will measure decibels within a range useful to telephone men in some voice frequency applications. It will measure voice, carrier, and video frequencies with useful accuracy if they are of a value of about ½ volt or greater. It would not be suitable for readings below —6 db because it contains no amplifier. Only a more expensive instrument would do this.

The instrument is very handsome in its design. The case is metal with grey enamel finish. The meter projects from the front of the panel and is completely enclosed in plastic, which results in brilliant illumination even when side lighted.

An electronic volt ohmmeter of this type has the advantage over the usual volt-ohm-milliammeter in that it is much more sensitive and hence has a wider field of application. It has the disadvantage that it is operated by the ac power and can only be used where ac power is available.

In using a voltmeter of any sort to

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- By-Pass Valve & Alarm for excessive Relative Humidity.
- Mechanical control valve for stand-by air supply (O.P.N.) in event of power failure
- Additional safety features on Air Compressor
- Power supply is 115-volt, AC on the Dehydrator and Air Compressor

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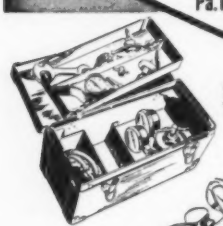
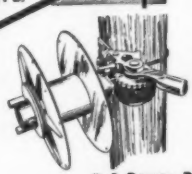
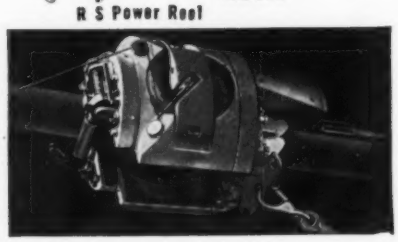


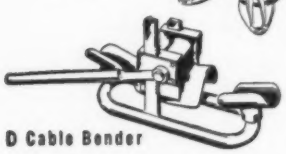
Pressure Testing Kit



R S Power Reel

C R Power Reel





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measure decibels it should be remembered that the line must be terminated in its correct impedance. If a telephone line has 1,000 cycles being sent into it at one end and a telephone with the receiver off the hook is at the other, this constitutes the correct termination and a voltmeter bridged across the line at any point can be made to read the decibels at that point. If, however, the line has no receiver off the hook or similar termination at the end, a 600-ohm resistor must be used. When measuring the decibels at the end of a line such as at the termination of a trunk, a 600-ohm resistance is usually placed in shunt with the db meter.

The next article will describe oscillator kits.

PUBLIC RELATIONS

Continued from page 36

only pays for the use of the connection when he sends data.

(3) Flexibility (the connection doesn't care what speed is used as long as it doesn't exceed a maximum of about 800 words per minute or about 600 bits per second.)

Business machine equipment may connect to the telephone network through a Dataphone subset, and this instrument he said "adapts the business machine information into information compatible with the telephone network. That is, it converts the on-off bit information or pulses to tones which can then be transmitted over the regular telephone connections."

The future of the telephone industry with regard to equipment was further unfurled by Earl J. Slack, Utah customer relations supervisor of the Mountain States Telephone & Telegraph Co., Salt Lake City.

In his demonstration "Dial F for Future" he exhibited solar batteries, transistors, and new compact telephones.

The look of the future was also stressed by Clive W. Haas of Big Timber, Mont., immediate past president of the United States Independent Telephone Association, in his talk, "USITA Takes the Forward Look."

The members of the association elected the following directors: J. W. Baker of Coeur d'Alene, Ida.; C. A. Blakeney of Carlsbad, N. M.; Ward Blazzard of Kamas, Utah; Rulon Callister of Delta, Utah; J. W. Christian of Pioche, Nev.; E. P. Corbin of Monticello, Utah; Earle Crandall of Pinedale, Wyo.; Donald Dickson of Rupert, Ida.; C. W. Haas of Big Timber, Mont.; C. M. Hart of Kingman, Ariz.; Charles McLean of Kalispell, Mont.; D. A. McLean of Denver, Colo.; H. B. Norman

of Gunnison, Utah; Floyd L. Reyher of Haxtun, Colo.; Grid Rowles of McCall, Ida.; J. E. Tipton of Espanola, N. M., and M. O. Trego of Sundance, Wyo.

The following officers were elected: President, Mr. Norman; vice president, Mr. Blakeney; and secretary-treasurer, Mr. Baker.

Also named was an executive committee consisting of Mr. Norman, Mr. Blakeney, Mr. Reyher, D. A. McLean and Mr. Baker.

Ohio Independent Telephones Reach 800,000 Level

The tremendous growth of the Independent telephone industry in Ohio was evidenced on Oct. 24 when service was supplied to the 800,000th customer by one of the state's 120 Independent telephone companies.

Location of this important event was the residence of Mr. and Mrs. Don E. Geis in Sycamore, situated in Wyandot County, and serviced by The Sycamore Telephone Co. The 800,000th telephone was an attractive, colored handset, properly inscribed to mark the event.

On hand to commemorate this historic milestone in the progress of Independent telephony were Coyne C. Bloom, general manager of the Sycamore company; R. J. Maxwell, Mansfield, president of the Ohio Independent Telephone Association; and Daniel W. DeHayes, Columbus, executive vice president of the Ohio association.

In addition to becoming the subscriber to the 800,000th Independent telephone in Ohio, the Geis family also increased the total number of Sycamore company customers to 1,180.

During the past 10 years, the number of Independent telephones in Ohio has increased from 480,000 to the present all-time record, and at the present rate of expansion Maxwell predicted there will be more than a million Independent telephones by 1964.

Today, 82 per cent of Ohio's 800,000 Independent telephones are dial-operated. During 1957, Ohio Independents converted 40 more exchanges to automatic operation, and an additional 53 exchanges will be equipped for dial service before the end of this year.

Subtle Rewards Best

"Proportion thy charity to the strength of thy estate, lest God proportion thy estate to the weakness of thy charity; let the lips of the poor be the trumpet of thy gift, lest in seeking applause, thou lose thy reward. Nothing is more pleasing to God than an open hand and a close mouth." —QUARLES.

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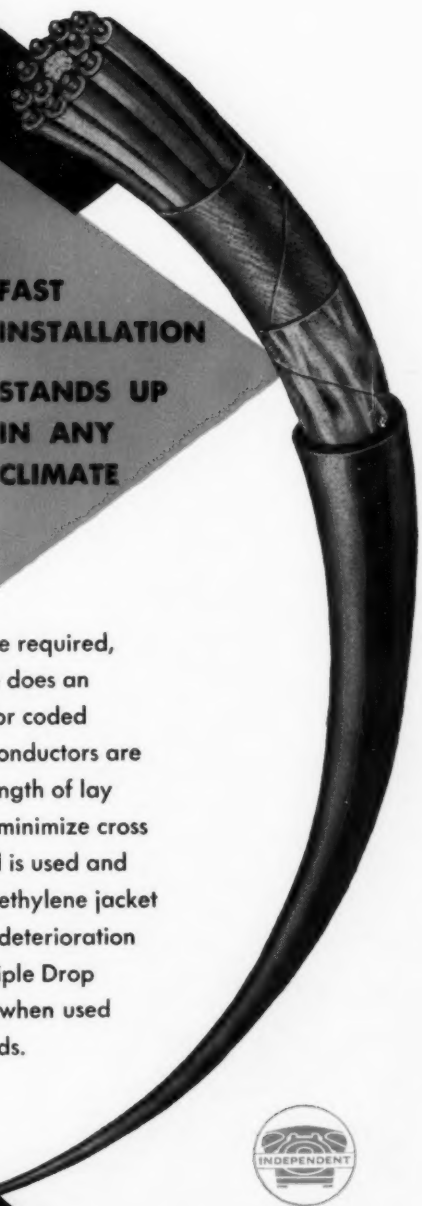

Where multiple drops are required, WB Multiple Drop Cable does an outstanding job. The color coded polyethylene insulated conductors are twisted into pairs with length of lay systematically varied to minimize cross talk. An aluminum shield is used and a special WB black polyethylene jacket protects the whole from deterioration in any climate. WB Multiple Drop Cable is self supporting when used with spiral type deadends.

INDEPENDENT

WB

6-8

WELL BUILT WIRES SINCE 1899

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News on New Products

SUBSCRIBER CARRIER — A new subscriber carrier telephone system that will provide what the company described as more and better service on existing rural party lines has been announced by Kellogg Switchboard & Supply, Co., a division of International Telephone & Telegraph Corp.

Mrs. Mary Funk, operator at The Farmer's Mutual Telephone System's Strasburg, Va. exchange, and Robert Miller, a subscriber, view Kellogg's new rural subscriber carrier.

The new carrier system makes eight voice channels available on a single existing pair of rural ones, eliminating the necessity of installing seven new sets of telephone wires.

By means of selective ringing provided by the system as many as 10 subscribers can be served simultaneously on each channel.

Therefore, as many as 80 subscribers can be given service at one time and any one of the telephones may be rung without ringing any other, the company stated.

The new carrier system assures expanded use of existing lines and even provides for a few private telephones if subscribers want them. At the same time costs are low, according to George T. Scharffenberger, Kellogg president.

The Kellogg carrier will operate even when power lines have been knocked out by lightning or severe storms. Small batteries mounted on a pole near the subscriber's home provide power for the carrier until normal service is restored. The batteries are charged continuously from the power lines during normal operations and automatically go into service when power fails.

An electronic device known as a compandor is used with the carrier to overcome noise disturbances sometimes heard on rural telephone lines. The compandor automatically raises the strength of users' voices so they may be heard clearly above any noise disturbances.

The carrier was developed at ITT Laboratories, Palo Alto, Cal., and already is serving subscribers at Strasburg, Va.; Michigan, N. D., and Kernville, Cal. Request NP969.

•

MOBILE TELEPHONE SYSTEM — Lenkurt Electric Co. is entering the mobile communications field with a newly designed mobile telephone system. The company states that the new system is fully compatible with existing nationwide mobile telephone service.

TELEPHONY PUBLISHING CORP.
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11/8/58

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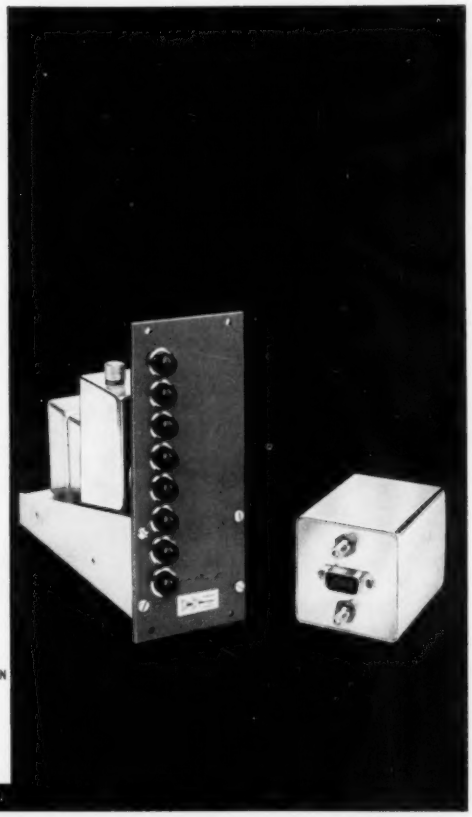

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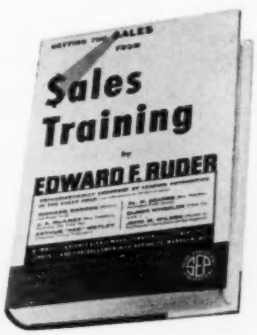

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We consider the unique aluminized coating of these wires to be superior to Class C galvanizing—in longer service life under virtually all conditions. Yet, with all their advantages, you can buy them at *much lower prices!*

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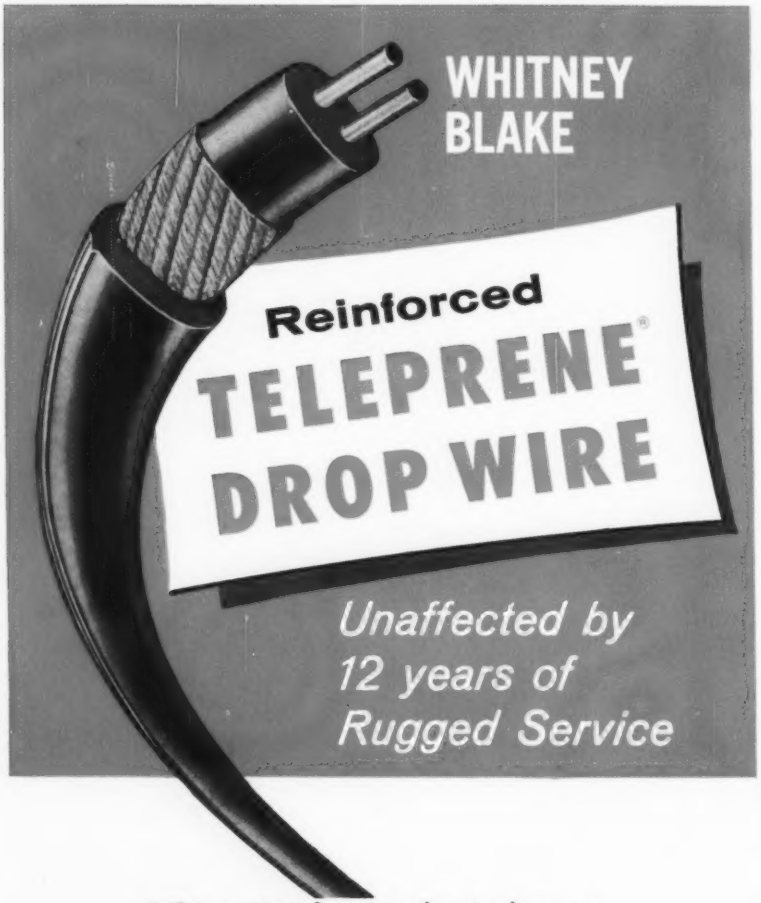


Still in service after more than twelve years . . . that's the exceptional record of WB Reinforced TELEPRENE Drop Wire . . . and there's only one reason . . . quality. By cutting drop wire replacement to the bone with Reinforced TELEPRENE, Whitney Blake has proved that even if you could get drop wire for nothing, unless it stands up as long as WB TELEPRENE, service calls and replacements would cost you more.

INDEPENDENT

WB

This wire is REA approved

1-8

WELL BUILT WIRES SINCE 1899

WHITNEY BLAKE COMPANY

NEW HAVEN 14, CONNECTICUT

Mobiltel-Manual is the initial product in a series of mobile systems planned by Lenkurt. The new mobile system was developed jointly with Automatic Electric Co.

"Mobiltel has been designed to meet the mobile service opportunities of the entire telephone industry," according to Alan F. Culbertson, mobile telephone project manager for Lenkurt. He also stated the system is completely engineered from dashboard to switchboard.

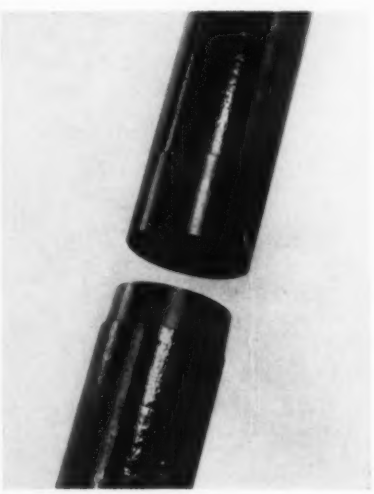
Heart of the system is a specially developed control panel that will provide direct connection to a conventional switchboard trunk circuit. Fully transistorized, it can be operated from 48-volt central office battery.

According to Lenkurt, the Type L2 terminal is drastically reduced in size, weight and power consumption from comparable equipment now in mobile use. It will be made available to other manufacturers in addition to being incorporated in all Lenkurt mobile systems.

Lenkurt also has completed an experimental model of its Mobiltel-Automatic, a dial mobile system now in final stages of engineering. It will go into production early next year, with initial deliveries scheduled in the spring. Request NP970.

•

CONDUIT WITH FLUSH COUPLING ATTACHED—Orangeburg Mfg. Co., Inc. announces availability of their standard fibre conduit — for concrete encasement — with a new-type flush coupling attached to each length at no extra cost.



The new development, known as Orangeburg CA Conduit, cuts laying time up to 26 per cent by eliminating assembly of separate couplings on the job, the company reports.

This new-type coupling, made from an exceptionally tough plastic especially compounded for Orangeburg, produces a self-sealing water tight joint. The company states the flush coupling eliminates the necessity of staggering joints in the trench and means less tooling on the job. It also eliminates separate coupling cartons, thus reducing handling and storage requirements. The new coupling fits flush with the outside diameter of the conduit, permitting storage in even stacks.

Harry N. Dietz, manager, Orangeburg Fibre Conduit sales, said that several large installations totalling over 100,000 feet have already been made by public utility companies in New York, Connecticut, Massachusetts, Michigan, Missouri and Ohio.

"Observation of these installations, confirmed the time-saving feature of this new development," said Mr. Dietz, "and officials of these companies were pleased with the results."

Mr. Dietz pointed out that Orangeburg CA conduit is an addition to the line and that Orangeburg standard conduit for concrete encasement and Orangeburg Nocrete conduit for direct burial are also available with the regular tapered-sleeve coupling. Request NP971.

•

POWER TOOLS, GENERATORS AND TRUCKS—Cook Electric Co. has introduced its new line of Impak power tools, generators, and trucks.

For the first time, the company states, a completely wired and tool-outfitted four-wheel drive truck with telephone-type body has been developed. By making available 110-volt, 220-volt single phase, or 220-volt three-phase "power at the pole" ranging from 1,000 to 5,000-watts capacity, a large variety of manual jobs are now mechanized. Gasoline-driven equipment and fuel storage may be eliminated, the Cook company points out. Tools are furnished for concrete, wood and metal drilling; nut spinning; grinding; shrubbery, limb and

George Christensen explains Cook's Impak Power to Miss Illinois at recent USITA convention.

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Cook's truck-mounted generator also can serve as an electrical power source in districts where power failure created by storm conditions or flooding must be supplied on an emergency basis for subcycle stations, public lighting and standby refrigeration purposes.

The Cook Electric Co. is marketing this new line of tools, generators, and Willys four-wheel drive trucks and bodies under the name of Impak Mobile Power. Impak power generators are also adaptable to all kinds of automobiles and trucks, according to the company, as they utilize the existing dc generator as an exciter and piggy back mounting base. Request NP972.

•

LIGHT-WEIGHT INSTALLATION TRUCK—Telephone people now realize that heavy truck equipment does not prove economical for certain types of maintenance, cable splicing and light installation. There is a general trend in some areas toward the use of light-weight vehicles for this type of work.

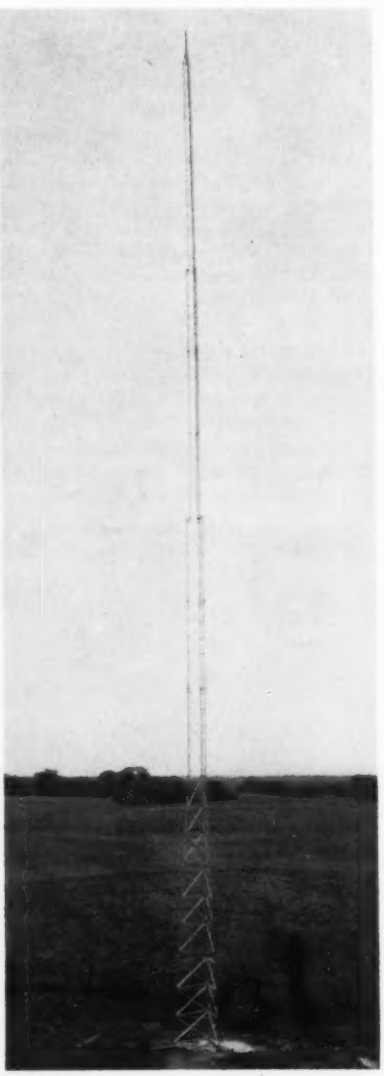
Through the coordinated efforts of Harper Motors, Inc., and the Baker Equipment Co., the Volkswagen light-installation truck, pictured herewith has been developed.

The maximum load weight of the Volkswagen pickup is 4,079 pounds; the net weight of the pickup is 2,094 pounds, and the weight of the special body with the equipment is 586 pounds. This leaves a pay load of 1,399 pounds, which is 600 to 700 pounds more than the average pay load that an average telephone company will carry on its trucks for this type of work.

The special Volkswagen body may be equipped with a bit rack for assorted drill bits, tree trimmer and tree pruning saw rack, ladder rack for 6-foot step ladder, tree trimmer rack for 6-foot sections, and overhead bows and ladder rack. Request NP973.

•

HEAVY-DUTY SELF-SUPPORTING TOWER—A heavy-duty tower self-supporting to a height of 130 feet and suitable for all types of communication needs is now being produced by the Rohn Mfg. Co.



The tower is constructed by using 13 different tower sections of varying size, weight, structural strength and taper. The individual sections can be

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New convenience, simplicity for intermittent or continuous measurement of incident or reflected power is available with Sierra 164 series Power Monitors. Direct reading, accurate within ±5%, high directivity, low VSWR. Four plug-ins offer 1, 5, 10 and 50 watts full scale, 25 MC to 1,000 MC. Two additional plug-ins offer 10, 50, 100 and 500 watts full scale. A further plug-in covers 10 MC to 75 MC, 50, 100, 500, 1,000 watts full scale. No auxiliary power needed; power flow direction reversed by control knob at top of plug-in.

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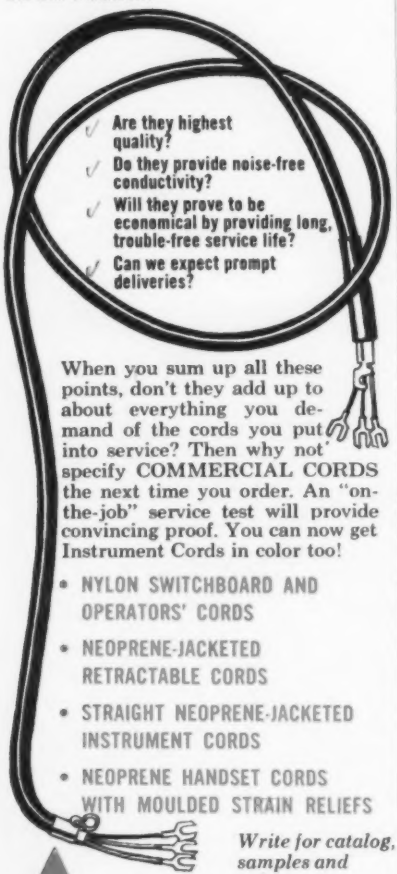
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used in making additional combinations to build self-supporting towers of variable heights and structural capacities so as to fit the particular need as required by the type antenna being used.

The wide flexibility of this tower, Rohn states, makes it possible for it to fulfill a large range of uses in mounting antennas for microwave, radio communications, television reception and amateur needs. It is available in completely hot-dipped, galvanized-after-fabrication finish and can be easily shipped and installed as all sections are 10 feet in length and tapered sections are shipped partially disassembled.

Complete engineering data, details and prices can be obtained by requesting NP974.

•

LIGHTWEIGHT HYDRAULIC TRENCHER — The Arps Corp. announces the development of a new, one-man-operated trencher—the Arps Trench-Devil, Model M.

The Model M is designed for use by utilities, contractors, municipalities and custom workers requiring a low-cost, heavy-duty trencher for a wide variety of jobs, states the company. Weighing approximately 815 pounds, the unit can

be easily skid-loaded on pickup trucks or small trailers, or it may be transported for short distances under its own power, at 2½ miles per hour.

There are four digging widths—2¾, 4, 6 and 8 inches, and up to 42 inches deep. Digging speed is variable from 0 to 1200 feet per hour. At the 30-inch depth, digging speed averages 120 feet per hour with an 8 inch width; a 24-inch depth increases digging speed to 800 feet per hour at the 4-inch width.

Self-propelled, the Model M Trench-Devil is easily operated by one man, Arps states. By merely moving a small lever, the hydraulic drive permits instantaneous reversal of direction while digging, making it possible to dig vertically along a wall.

Hydraulic drive also permits immediate speed changes throughout the entire digging range by turning a speed control handle. Conveniently located for the operator, says the company, are controls for the digging chain clutch, conveyor clutch, and hydraulic drive clutch.

One-side dirt delivery is accomplished by a rubber-belted conveyor. An adjustable dirt deflector on the conveyor keeps the dirt as close as desired to the trench. The conveyor may be removed in 30 seconds for greater ease in loading.

The Arps company lists these other important features of the trencher: cutters made of high carbon, heat-treated steel; ball, roller or needle-type bearings utilized at all points of high speed or heavy load—sealed to keep out dirt; and a box-type, heavy steel frame to withstand severe use. Request NP975.

Obituaries

W. WALLACE WEEDFALL, former Stromberg-Carlson assistant to the vice president, with responsibility for the guidance of policy concerning carrier, multiplex, and microwave systems, and, from Mar. 1, 1957, a consultant, died on October 29 in Dallas, Tex.

Mr. Weedfall joined Stromberg-Carlson in September 1953, when the company acquired the Southern Electric & Transmission Co. of Dallas, where he was chief engineer. Shortly thereafter he was appointed general manager of the Dallas manufacturing branch, and went to Rochester when that operation was transferred in October 1955.

A native of Kansas City, he was an electrical engineering graduate of the University of Kansas. Prior to his affiliation with Stromberg-Carlson, he had extensive experience in the Southwest and Mexico as a radio broadcast engineer, transmission and equipment engineer for the Southwestern Bell Telephone Co., Dallas; communications engineer for the Phillips Petroleum Co., and the Texas & Pacific Railway, and in other engineering capacities for American and Mexican firms.

He was an associate of the Institute of Radio Engineers, a member of the American Physical Society, the Acoustical Society of America, and the microwave committee of the Radio-Electronics-Television Manufacturers Association. He held a professional engineer's license in the state of Texas.

•

CARL WHITMORE, 74, retired president of the New York Telephone Co., died on Oct. 13 of a stroke in his home in Manhasset, N. Y.

Mr. Whitmore was born in Oakland, Cal., in 1884. He was graduated from the University of California and in 1911 joined the Bell System as a field man with the Pacific Telephone & Telegraph Co. in San Francisco.

He was transferred to Portland, Ore., as a toll engineer and successively became district plant engineer in 1917; division plant engineer in 1920, and division superintendent of plant in 1921.

He returned to San Francisco in 1923 as division superintendent of installation for the Western Electric Co., and three years later became general superintendent of installation for the company's western zone in Chicago.

In 1927, he went to New York as general manager of installation for Western Electric. In 1935, he was made general plant manager for the upstate area of the New York Telephone Co. The following year, he was appointed vice president and general manager of the Long Island area, and in 1940, became a director of the company and vice president in charge of personnel.

He was elected president of New York Telephone in 1944 and held that position until his retirement in 1949. He remained as a director until 1953.

Surviving are his wife, Mrs. Elma Edwards Whitmore; a son, Edwards Whitmore; three daughters, Mrs. R. H. Keeler, Miss Barbara Whitmore, and Mrs. R. N. MacKinnon, and a brother, Welles Whitmore.

Appoint Kansan to REA Telephone Advisors Group

David McKay, manager of the Golden Belt Telephone Association, LaCrosse, Kans., has been appointed by REA Administrator David A. Hamil to the national telephone advisory committee.

This committee is composed of 17 persons active in the telephone industry throughout the United States. It meets semi-annually with the next meeting scheduled for Nov. 24. Mr. McKay's term is for two years.

Two N. D. Exchanges Sold

The United Telephone Mutual Aid Corp., Langdon, has been authorized by the North Dakota Public Service Commission to purchase the Towner County Telephone Co., Cando, which operates exchanges at Rock Lake and Egeland, it was reported on Oct. 13.

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Holan Corp., Ohio Brass Seek Merger Approval

Stockholders of the Ohio Brass Co., Mansfield, O., and of the J. H. Holan Corp., Cleveland, O., will be asked to approve, on Nov. 12, a proposed merger of the two companies. Proxy statements outlining the details were mailed on Oct. 22 by both corporations.

The merger would consolidate two established suppliers of products for the utility industry. Ohio Brass, for whom electric companies constitute one major market, is a leading producer of high-voltage porcelain insulators and also makes a number of other products for the electric power industry.

Holan is a manufacturer of truck bodies and mechanical, truck-mounted work-simplification devices designed especially for use by communication, electric power, gas and railroad industries.

According to the terms of the merger agreement, J. H. Holan Corp. would be merged into the Ohio Brass Co., a New Jersey corporation. George L. Draffan would be chairman of the board, and Roger A. Black, president, with J. Howard Holan, being named one of the vice presidents of the Ohio Brass Co. and continuing in charge of the Holan business.

If the merger is approved, a new corporation would be formed to carry on the Holan business, and no personnel changes are contemplated.

Ohio Brass presently has both A and B common stock, the B issue being non-voting. These will be replaced by a new single issue of voting common stock on the basis of two new shares for one of the present A or B shares. In exchange for each share of Holan, 0.4487 shares of the new Ohio Brass common will be issued. No fractional shares will be issued, but scrip certificates will be given which can be combined and exchanged for full shares.

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White Diesel Appoints Seattle Branch Manager

Harold R. Ginther has been named Seattle branch manager for the White Diesel Engine division of the White Motor Co. Mr. Ginther assumed his duties Sept. 1, following the recent retirement of former manager Fred Hudson.

H. R. GINTHER

Ginther, with 10 years experience in engine and power transmission sales, has until recently been Seattle area manufacturer's representative for a Portland, Ore. company representing national lines of industrial and marine equipment.

White Diesel's Seattle office is a sales and service center for the company's line of diesel engines.

Mr. Ginther received his B. S. degree in mechanical engineering from Purdue university in 1948. He is a member of the Society of Automotive Engineers.

Exide Moves General, Industrial Offices

The Electric Storage Battery Company moved its corporate general offices and the headquarters of its Exide Industrial Division to new quarters during October, vacating the space they have occupied since 1950 in the Robinson Building, 15th and Chestnut Streets, Philadelphia.

First to move were the administrative, sales and accounting departments of the Industrial Division. Effective Oct. 23, they are located at the Philadelphia plant, Rising Sun and Adams Avenues.

The corporate offices were moved Oct. 31 to the eighth floor of Philadelphia's newest office building, No. 2 Penn Center Plaza at 15th Street and Pennsylvania Boulevard.

Transfer of the Industrial Division offices to the Philadelphia plant will consolidate the division's headquarters operations at its largest manufacturing facility.

Also in a new location is the Cleveland branch of the company—relocated as of Oct. 27, in a new building at 2225 Hamilton Ave., in downtown Cleveland.

A new service station-warehouse will be established at the same location.

The building has been constructed especially for the Exide branch which serves the Ohio-central Kentucky-southeastern Indiana area. Previously, the branch headquarters were in the Engineers Building.

The branch has a staff of 16, responsible for sales and service of Exide industrial batteries, Electric Products chargers and related equipment.

Customer Service Manager Appointed by Ramset

James J. Clarke, sales manager for Ramset Fastening System, Olin Mathieson Chemical Corp., Cleveland, has announced the appointment of Edward Nimtz, previously in charge of the shipping department, as customer service manager in the sales department.

Donald Binder, previously customer service manager, has been appointed purchasing agent for Ramset, it was announced by F. Morgan Taylor Jr., plant manager.

Mr. Nimtz has been with Ramset for 10 years, and Mr. Binder joined the company in 1956.

Ramset manufactures powder-actuated and hammer-operated fastening tools which facilitate fastening to concrete and steel.

Traffic Total

More workers (about 18,500) die each year in off-the-job motor vehicle accidents alone than in all on-the-job accidents (a little more than 14,000).

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June, 1957	160.30
July, 1957	194.90
August, 1957	206.15
September, 1957	217.30
October, 1957	206.15
November, 1957	169.35
December, 1957	126.50
January, 1958	130.65
February, 1958	98.02
March, 1958	121.25
April, 1958	177.85
TOTAL	**$1,952.15**

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